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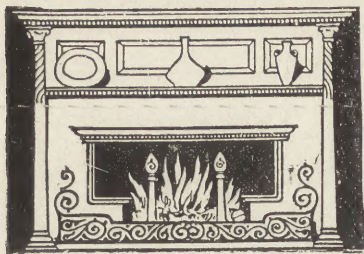
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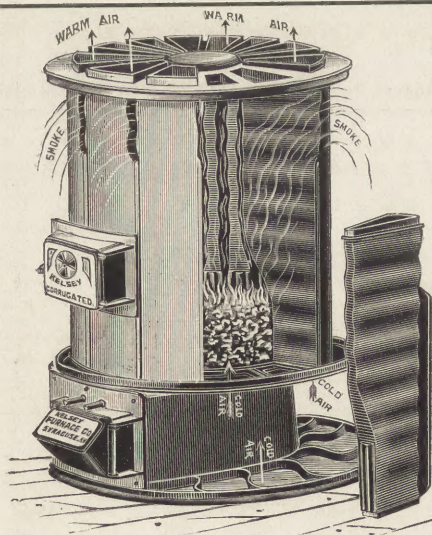
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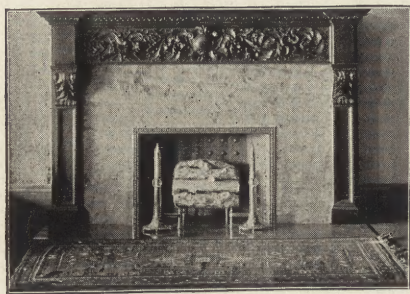
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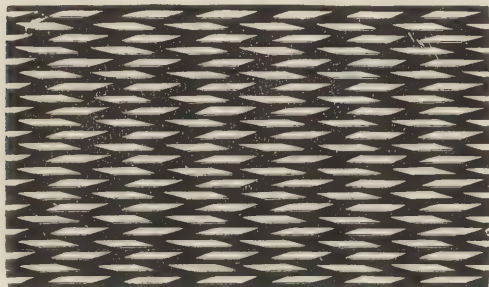
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The
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VOL. V.

JULY-SEPTEMBER, 1895.

No. 1.

ARCHITECTURE IN LONDON.

ARCHITECTURALLY, London is an undiscovered country to the American. The general traveler and the architect, when in the world's metropolis, have other things to occupy them than the study of its buildings, save such as have an historic interest, and in which, often enough, the actual architectural value is very small. And, this free land of ours is now so suffering from an audacious attempt on the part of a goodly number of our architects to subject us to the domination of the French, that the claims of current architecture in England for considerate attention are almost ignored if not altogether overlooked. Without seeking to open the question of the relative merits or advantages of the English and French ideas in architecture for American conditions, it is not impertinent to ask if this is altogether right? Should we, in our efforts to arbitrarily transport the architecture of one country across the Atlantic, deliberately pass over the work of another people that in language and in race stand closer to us than any other, whose ancestors and ours were fellow-townsmen, whose customs are ours and from whom our very civilization takes its origin? But it is not necessary to argue for the transplantation of English architecture to America; we do not need that any more than we need the French, for both are foreign. But we should not, for that reason, close our eyes to the merits of English architecture, nor should we hastily as-

sume that, because the Strand and Holborn and Regent street are lined with some of the most particularly uninteresting structures in the world there can be nothing good in English architecture.

England unquestionably suffers in the estimation of architectural students from its dead age of the last century and the early part of the present, in which its cities were clothed in monotonous and unartistic garb. It has suffered from its insularity, for its people do not give nor do they receive the quickening artistic impulses that have made the French the dominating artistic nation of the continent. It has suffered from the lack of a general and widely distributed artistic feeling among its people, who are not naturally artists as are the French and Italians. It suffers from a unity of purpose among its architects, from the rapid changes in the popular taste of the day, from the importation of foreign styles for a few years only, to be cast aside for something in a later fashion. Even now its architects have scarcely found their level, are not yet wholly certain in what way to direct their talents, what style to use, what form to give that style. But though there is still uncertainty and mixture there has been an incredible spread of correct architectural taste, of sound artistic feeling, of a striving after better things, of an effort to renew the historical continuity that was broken in the last century. And in this lies the strength of

current English architecture. The historic past of the art in England was one of the utmost splendor and activity. The land is filled with charming structures of previous times when people thought more about architecture and less of other things. And it is not necessary to take a long ocean voyage to see these, nor to study them in photographs or prints; they are at the very doors of every living English architect, and in many cases those men who have achieved the greatest successes in recent architecture have been those who have most frequently sought inspiration at this inexhaustible source. This is something quite distinct from anything in any other country, unless it be Italy. For the French, with all their boasted traditions of a school of architecture of nearly two hundred years' duration, cannot point to their past as the actual origin of their present, while the Germans simply mimic the modern French style in a thoroughly German manner. The Renaissance in England is strongly tinged with English color, and the British architect has a long unbroken past which, while it may not help him with models, will at least suggest possibilities of continuance and development.

It is well to remember these facts in studying the architecture of London, just as it is well to refrain, in doing so, from making comparisons with the French. I do not propose, in the present paper, to argue the relative superiority, artistically or practically, of either. All that I would ask is that the subject be approached in a liberal spirit, not with the idea of finding out all the bad there is, but how much good; and I do not think any one who approaches the subject in such a spirit will lack profit in his study.

With the exception of the churches of Wren, and a few other buildings that might almost be counted on one's fingers, the most interesting of London structures are of very recent date. This is not a paradox, as may seem at first thought, but is dependent upon the utter monotony, sameness and identity of the older London buildings. It is a dullness that permeates whole districts of the city, predominates in street after

street of sickening negation, until almost anything is welcomed by way of change. One is not appalled, as in many cities, by the presence of architectural monstrosities; one is hypnotized by the endless reiteration of the same lack of architectural form, the most careless—or is it studied?—indifference to architectural values; the utter ignorance of architectural ideas, the complete mastery of commercialism that would do no more than provide the barest, ugliest shelter, and which, when applied to domestic work, is in the barest, ugliest, most intolerable of all forms, styles and manners of building. Queen Anne's Mansions, though not so old as many of the dull streets of London, is an excellent type of this style of building; a huge group of structures ten or eleven stories high, without a single architectural feature, without an idea; a monstrous pile of negation that in self-assertive commercialism, profound indifference to architectural thought, complete disregard of architectural amenities, if so they may be called, quite exceeds all other structures of the world. It is customary to twit America—and the English are perhaps the loudest in so doing—with its subservience to commercialism in architecture; yet nowhere on the face of the globe can such a terrible example be seen as this pile of London flats. It is not a type; it is rather the culmination, the final expression, let us hope, of a system of building long before applied on a smaller scale, but in quite as horrifying a manner, to miles and miles of London streets.

This is the painful side to London architecture, and a very large one it is, but it is necessary to refer to it here in order to explain just what I mean in saying that only the new buildings of London are of interest. These buildings are still in the minority in the huge mass of London architectural deadness, for as yet there is no "new" London, architecturally speaking. But the last twenty years, and even less than that, have produced many buildings that have, bit by bit, changed the aspect of the city to a considerable extent. Yet it would be folly to assume that all these changes have been

brought about without the usual retrograde steps that accompany all architectural movements in this singular age of ours, enlightened on all points save architecture. If the older buildings of London are bad from the absence of architectural ideas, many of the newer ones are quite as intolerable from the attempts of would-be architects, speculative builders and inexperienced persons to build and endow their city with wondrous things as bad in their positive characteristics as the older structures are in their negativeness. Of the two evils negation is the lesser; but there is enough of positive horrors, and the traveler who wanders through the streets of London will find himself continually stumbling upon buildings that positively cry aloud for attention, and will not be satisfied with an occasional glance. The conditions under which buildings are erected in all great cities are such that this follows as a matter of course. It is not always those who know how to build, or who have a discriminating taste that permits them to judge between the good and the bad, that have opportunities for putting their conceptions into actual shape. London is no better off than other great towns in this respect, a circumstance that, taken with the enormous quantity of unarchitectural buildings it contains, enables it to maintain the distinction, painful and distressing though it be, of having within its area more bad buildings than any other city in the world. And this is not dependent upon its vast size alone, but upon the extraordinary number of bad buildings it actually contains.

But enough of the bad things; it is not my purpose to dilate at length upon London's architectural misfortunes—a topic scarcely exhaustible—the bad things of the world are too evident to need special direction to them. I am more concerned with its good new buildings; buildings not only affording welcome relief to the general monotony of London architecture, but, in themselves, many of them, of the greatest interest. And, first of all, a few words upon some general characteristics.

Picturesqueness is a strong note, perhaps the strongest note, in all new buildings. It is not always well done; it is often attempted in buildings whose purpose would naturally seem to forbid its use, and it is of course tried by incompetent people who have no idea of what it means; but, be it good or be it bad, it is one of the chief ends at which London architects are striving. It may be seen in a somewhat too pronounced tendency to break up surfaces; it may be seen again in a somewhat too great fondness for detail, oftentimes too frequently repeated; and it may be seen again in the almost universal fashion of finishing a front with a gable. It is a survival or a revival of the ancient picturesque quality of English work so commonly seen in all old buildings, and which was perhaps an effort on the part of their designers to harmonize them with the landscape. There is no landscape in London to harmonize with the buildings or with anything else, but it is interesting to note how, in a very different way from its older use, this element has been applied by modern architects under new conditions to structures of a wholly different class. I need not here open up the question whether picturesqueness as such is a proper quality for city buildings; doubtless there is a point beyond which it should not go, and it is no more proper for all buildings than is a universal application of the stately and monumental. Picturesqueness, indeed, is, properly speaking, a distinctive and natural property of small structures; large edifices require a more stately treatment that may often develop into the monumental.

But the picturesque quality in London buildings is dependent on more than the modern revival. The small size of the buildings, even in valuable city sites, is another striking characteristic. This naturally heightens the picturesque tendency, since it is very much easier—and much more natural—to make a picturesque design on a small scale than on a large one. A London office building, for example, has apparently no single idea in common with an American office building. Where the American structure will be

huge and ungainly, with countless windows, a maximum of light and a minimum of wall, and generally clothed in a grotesque exterior quite unsuited to it, the English office building will be a small and dainty edifice, four or perhaps five stories high, often, as likely as not, designed in a free and picturesque fashion that quite takes away from it the indelible commercialism of most American office buildings. This is one reason why the Britisher is so apt to condemn, in the loudest possible voice, the commercialism of current American architecture, which he no more understands than the American does British architecture. But, if the truth be told, American architecture, seen through English spectacles, contains many elements of pain and shame, as indeed it does to those at home (save its makers). But it is no more intended to be looked at in that way than English work is to be criticised by the American standard. The conditions that call the one into existence are different from those that produce the other. The American building might, it is true, be used in London if the building regulations permitted erections of that height, but it would represent ideas in building to which the British mind is not yet ready to adapt itself. Each party must be content with what it has of its own, and be willing to view the other's buildings as he would have them view his. Placing oneself in this position, it is readily apparent that the English office building is as satisfactory to its purpose as the severest, hugest commercial structure in America. And certainly it is hard to quarrel with conditions that almost demand picturesqueness in commercial buildings.

I have referred to the London office building at this point because its small size is really notable, and is something so different from what we have in America. And, indeed, it might almost be called a new tendency in London itself, many of the older buildings covering more land than a good number of the new ones, though, owing to the British tenacity of custom, and the further fact that, so far as I could make out—if wrong I trust I will be cor-

rected—unopposed enjoyment of privileges one has not acquired by purchase, for a certain time, give one perpetual rights thereto, there has scarcely been a change in heights. London, however, is no more a city of small buildings than wholly of picturesque structures. Perhaps as striking an example as could be given of the tendency to the picturesque is the charming office building designed by Mr. Pierson for Mr. William Waldorf Astor, just now finished, on the Thames Embankment. This is a veritable gem, small and delicate, and quite unlike an office building, so far as commercial exterior is concerned. Unhappily it is overshadowed by the towering School Board building next to it, one of the smallest of London buildings being, by strange chance, placed directly beside one of its largest. But this Astor building is so delightful, its detail is so good, its design so thoroughly picturesque without strain or unnaturalness that it may be taken as a type, and as an example of the best type of the two characteristics we have just been discussing.

The very dullness of London streets sets off the picturesqueness of its buildings if it does not, now that it has educated and cultivated architects, actually demand it. Its influence is felt in structures of all sorts; in office buildings, in houses, and even in great public structures. The New Law Courts, the Imperial Institute, the Museum of Natural History are all instances of large public buildings into whose design this element has entered to a perceptible degree. Not all to the same extent, it is true, nor always with the same success, but it is sufficiently marked to be noticeable. And yet, while picturesqueness is a quality of small buildings rather than of large, it would be wrong to find fault with these examples on that account. In the Imperial Institute the architect has rather hurt his design than improved it by giving way to this tendency. In the Museum of Natural History there are more towers than there is the slightest need of, and the rich and abundant detail has not well stood exposure to the trying London climate. In the

New Law Courts there is much detail and variation for the sake of picturesqueness alone. But take away this element and the design, in each case, loses distinctly and disastrously, if indeed it does not become wholly commonplace.

In noting the general characteristics of London architecture a word or two should be said on the subject of materials. With a fine determination to make the most of their opportunities, the builders of the older monotonous London houses built with a brick of dull hue, admirably suited, no doubt, to the atmosphere of London, but which enormously heightened the deadening effects of their structures. The architects of to-day bid fair to go as far in the opposite direction as their predecessors went in theirs. Brick and terra cotta are the favorite materials, and very good and satisfactory results are frequently obtained with them. New brick of a brilliant red is much used, though how it will stand the effects of London climate I do not know. When new it is a very good color indeed and some happy combinations are obtained with trimmings of a light buff stone, almost white when fresh. Not so successful is a sort of pink terra cotta, an artificial mixture introduced by the manufacturers, and which seems to have "caught on" without any reason for the catching. It speedily becomes faded and dirty and is not in the least suited to London. When used alone the effect is bad enough, but unfortunately it is often employed in combination with red brick, not unpleasing when new, and, in fact, rather startling, but excessively depressing after the pink has lost its freshness.

The ease with which terra cotta adopts itself to ornamental and decorative purposes is as great a snare to London architects as it is to those in other parts of the world. Centuries of experience do not seem to have impressed the average London architect with the knowledge that the climate of his beloved city is entirely unsuited for elaborate external detail. Sooner or later detail in any material, in brick, in terra cotta, or in stone, blackens and darkens until its value is almost gone,

or until what was intended as an ornament becomes a positive eyesore. The example of St. Paul's Cathedral is constantly present, and what has happened to that must happen to every other building in London that is burdened with any considerable amount of detail. Even so recent a structure as Mr. Waterhouse's Natural History Museum at South Kensington, built in buff terra cotta, originally of a good warm hue, is black in many places where the elaborate detail has been exposed to atmospheric influences. Yet in the face of these examples, and their number is all but limitless, many architects go calmly on adding piece after piece of detail to their buildings, and doing, with the utmost apparent glee, and sometimes in the best of good taste, just what they ought not to do. And herein British architects give expression to a characteristic abounding in architects at home.

Besides the leading characteristics of current London architecture already noted, are sundry devices and types of parts so frequently employed as to be fairly considered general, though in themselves scarcely distinctive. These include the constant employment of high-pitched roofs since the Gothic revival, with gables and dormers, and in almost every sort of structure; in the elevation of the building, wherever possible, upon a low basement, usually partly underground, a system that obtains not only in dwelling houses—though not now so frequently employed in the suburbs as formerly—but in the business and city buildings where its use is much less logical; in a very general employment of broad plain unornamented freizes between windows, bordered by string courses formed by the hoods of the lower windows and the sills of the upper; in the banding together of windows in vertical bays, though often crossed by horizontal lines. And it is, perhaps, needless to add that in a land where the buildings are almost universally heated by open grates—for such is the progress of civilization in the British Isles—the chimneys add a special note of their own to the design, and materially help in giving distinctive character. These may

not all be entitled to be called characteristic elements in modern London design, indeed that is composed of too many diffuse elements to be catalogued and labeled, but they enter so frequently into the new designs as to be quite noticeable.

It is not well to generalize too much in speaking of the material at the command of the London architect. After all, it is not what a man *has* to use that makes architectural design good or

his command, of the method of design he follows, but in the manner in which he designs. Mr. Norman Shaw, for example, obtains quite unprecedented results by a thorough mastery of form, quite apart from ornamental detail, results, by the way, that many of his copiers and imitators have entirely failed in obtaining, even when they copied him most closely. Mr. Ernest George, whose style is wholly different from Mr. Shaw's and who uses



RESIDENCE.

R. Norman Shaw, Architect.

great or even pleasing, but *how* he uses it. Gables and plain bands, stone and terra cotta, picturesqueness and the absence of huge structures may be well enough in their way, but unless they are handled by a capable hand, combined in a capable manner, and used in a way that obtains the best possible result, all of which requires a fine artistic insight, the building is never other than a failure. London architecture is not composed of the materials the architect has to use, of the devices at

much more detail, resembles him in standing along among his followers.

It is the man that makes a building great or even interesting; the individuality he puts upon it, the feeling he breathes into it. There is a good deal of building in London in which this may be noted; buildings that are gems in the midst of an unsightly mass of unsightly structures, the horrid remains of a thoughtless age. Yet few as these new structures are, compared with the enormous bulk of older work



RESIDENCES.

Ernest George & Peto, Architects.

not yet swept away, they lift current English architecture well up from the indifferent and the mediocre, and place it, so far as domestic architecture is concerned, in the very front rank of modern architecture. This fact is not at all understood in America, where the French craze now overshadows every other architectural notion. We do not need the substitution of English models for French, for that would only be the substitution of one fad for another, but if our American architects would know the best that is now being done in their art—not what has been done, if you please, but what is now being done—they cannot afford longer to ignore the claims of modern English architecture. It is not always great, it is not always satisfactory, it is frequently full of faults, and personal affectation oftentimes spoils a design otherwise harmonious and beautiful; but in its best examples it is always interesting and often rises to

the very highest type of modern architecture.

In surveying current English architecture the conditions under which it is produced must be kept well in view. English architects have an historic past of almost unprecedented brilliancy to look back upon. Its monuments are continually before their eyes; its influence is felt in their very life; they cannot escape from it if they would. The same is true of France, but the French architects have so long since emancipated themselves from their historic past by sheer force of academic training and scholarship as to be quite uninfluenced by their stupendous historical monuments. English architects, even in the most brilliant periods of their Renaissance, did not forget their ancient past; there is, therefore, a strong note of this feeling, this respect, this influence—call it what you will—in their present work. It is stronger now than a few years ago, for the wild

unreasoning copying of forms in the early stages of the Gothic revival has given way to a soberer study, a keener insight into the signification of forms, a wider appreciation of the real nature and function of modern architecture. With Wren's glorious cathedral of St. Paul's before them, a work as distinctively English as Salisbury and Lichfield, as York and Ely, it would be strange indeed if English architects should forget the teachings of their Anglo-Classic Renaissance. Yet they

the results of officialism in architecture, which appears to no greater advantage in London than in America. The lack of success in handling Renaissance design is further illustrated in the famous Church of the Oratory, Brompton. This is, perhaps, the most pretentious Renaissance undertaking in modern English church architecture; the selection of the style was determined by ecclesiastical influence, the Roman church of to-day feeling more at home in a sumptuous Renaissance structure



VICTORIA EMBANKMENT GARDENS.

have at times ignored these teachings, but with the result that, with scarce an exception, the modern Renaissance buildings of London which have been designed under French influences, are totally uninteresting. Such, for example, are the Bankruptcy Courts, the latest addition to the General Post-office, and Sir George Gilbert Scott's Public Offices, Whitehall. The last was by official order and against the vehement protests of the architect who was forced to carry it out in a semi-French style believed to be Italian by its official sponsors. The two former structures are

than in a Gothic edifice. Although the winner of the competition in which this church was gained subsequently studied in Italy, it cannot be said he has added a new stage to the development of the so-called classic church.

Of the successful Renaissance structures in London the first place is unquestionably held by the City of London Schools on the Victoria Embankment. This is a splendid and imposing design of a rich architectural form, heightened with sculpture to an extent rather unusual in British public buildings. Purists will doubtless tell



THAMES EMBANKMENT.



NORTHUMBERLAND AVENUE.

us that, at the best, it is a mixture of motifs; that its basic idea is early French Renaissance; that its central turret is borrowed from the Hotel de Ville in Paris; that its flanking towers have a suggestion of Wren in them; but the whole design is well composed and exceedingly happy, without the hint of patchwork these bald statements might imply. And certainly American architects who look with the utmost complacency upon the actual appropriation of entire designs of the past in their own buildings, and American so-called critics who do not hesitate to praise these misappropriations under the very eyes of the public, cannot quarrel with a man for borrowing a few hints. Raised on a lofty base, the two stories of the main façade of the school, with its high pitched roof and supporting tower at either end, forms one of the most successful and picturesque structures in all London. The chief features of the design is a series of arches carried across the second floor, with deeply recessed windows. An abundance of light and shade is obtained and a very happy expression given to the great hall behind them. The detail is rich without being burdensome, and the whole design indicates a thorough mastery of the materials employed. The high roof, with its light lantern in the centre, is admirably conceived, and, with the towers that surmount the end piers of the building, forms a thoroughly satisfactory finish.

In striking contrast with the elaborateness of this design, at one end of the Embankment, is the New Scotland Yard at the further extremity. This is a severe and stately design by Mr. Norman Shaw, in which the effect is obtained wholly by careful proportions, strong walls and simple windows. It is a large rectangular building with four turrets, one at each corner, and two gables with roofs carried parallel to the river. The severity of the architecture, which includes no ornament whatever, save the rings of the turret bases and the heavy entrance porch—barring the not altogether happy gable ornaments—is perfectly in keeping with the purposes

of the edifice. Yet plain as it is it bears the impress of the work of a consummate architect who knew exactly what to do in the right place. Some exception may be taken to building the brick-work of the superstructure directly upon the granite of the basement without the intervention of a moulding or line of demarcation between them; but with this exception it is a notable piece of design difficult to find fault with.

And beyond this structure is the greatest and most splendid public building in London, an edifice so grandly thought out, so superbly planned, so satisfactory in its masses, its forms, its detail, that one can scarce realize that it was the work of a single man in the present century. I refer to the Houses of Parliament, whose immense superiority is even now scarcely recognized by English architects, but which have not only held their own against all later work, but which, in their class, most favorably compare with the best work of former periods. It is not the least distinguished glory of the British Houses of Parliament that, unlike most other structures designed on historical Gothic bases, they are most distinctly modern. There is no copying of forms simply because they were old or "looked well;" no sham imposition of ancient ideas prostituted to modern uses, no suggestion, even, of antiquity. They are as distinctly modern and up to date as though they were built—shall I say?—after the latest and most approved French fashion. Among all other structures of London they stand alone and supreme—excepting St. Paul's Cathedral, which is to be judged by quite a different standard—holding their own against any other building of modern times. We may not yet be able to judge this masterpiece as it should be judged, we may not always be able to shred preconceived notions of what is right and good in architecture when we stand before it, but I am convinced that free, unbiassed study can lead to but one result—a deepening impression of the greatness of the conception and of the greatness of the man who designed it. Fortunately it has had no copiers,

nor is it a building one would see copied. Unique among the great buildings of the world it is rightly entitled to be classed with the greatest and most successful of them. As a work of art no other building in England of this century, if indeed in all Europe, can compare with it. And it should not be forgotten that it is a thoroughly English structure, impossible of design out of England, almost inconceivable on any other site than directly upon the Thames; certainly nowhere else so beautiful and imposing. Those well-meaning but misguided gentlemen who are now engaged in foistering the style of modern France upon this unoffending and helpless country, would do well, in considering the essentially national character of the style of this structure, to ask if their own importations—just from Paris, like a bill of milliner's finery—can bear the test of American nationality. Surely this is not an inconsiderable element in the evolution of a national architecture.

Begun in 1840 and practically completed when Sir Charles Barry died in 1860, the Houses of Parliament scarcely belong to the present stage of modern English architecture. A more pertinent illustration is supplied by the New Law Courts. Here is a closer following of the historical materials of Gothic architecture, and its faults of design are largely due to this fact. There can be no question of Street's thorough mastery of the Gothic, nor that he frequently endowed his designs with a large amount of modern feeling, nor that he was keenly alive to the modern utilitarian requirements of almost every grade of building; but he was unable to shake off his intense fondness for the picturesque, which often led him into errors. He did not hesitate to put tracery into his windows when their situation and the internal disposition of the apartments they lighted called for the utmost amount of uninterrupted daylight. He did not stop at towers and turrets if he could, by their use, obtain highly picturesque effects, that while beautiful were certainly not necessary nor useful. The New Law Courts are clearly the

most notable public buildings in London, after the Houses of Parliament, but they are not the masterpiece the older structure is, though it is unfair to both of them to place them in comparison.

Few modern buildings have been so severely criticised for internal arrangement as the New Law Courts. Yet, as finally built, they included accommodations for four more courts than were originally intended. The great central hall was determined upon by a small majority in the committee, for no other reason than that there had been one at Westminster; but here the hall is on a different floor from the courts, and as the public are not admitted to it, it is practically useless. The almost unparalleled disputes between the architect and his committees, during the construction, were of so painful and vacillating a nature as to be responsible for many of the errors. It is its misfortune to be placed where it cannot be seen. On three sides are narrow, crooked streets, from which a general view is impossible, and the open space on the fourth affords no better vantage ground. It is especially unfortunate that the main façade should face the winding Strand, since from no single spot can the whole of it be seen. Possibly, Street himself was fully alive to this circumstance when he broke his main front up into almost as many parts as it could be broken into, separated them by turrets that are monotonous in their frequent reiteration, and designed what is really a series of fronts that open up one after the other, as the building is approached from the direction of Charing Cross. Had it been necessary to follow the curve of the street, no better way of getting over the difficulty of a façade could have been adopted, but even though necessitated by the site, the building suffers from this treatment and is lacking in the unity of exterior that may naturally be demanded in so long and important a front. Even as it is, the best use has not been made of it. The turrets have already been spoken of as wearying in number, and not altogether pleasing in design. The arcade carried across much of the lower



South Kensington.

IMPERIAL INSTITUTE.

T. E. Colcutt, Architect.

part of the façade, partly as a screen, partly as a dividing line from the street, and partly, no doubt, as a device to unite the whole in one idea, quite fails of its purpose, and scarcely amounts to more than a hindrance to light and air. The entrance to the main hall, originally intended to be parallel to the Strand, instead of at right angles to it, as it now is, is further wanting in the monumental treatment that should have been given to it. But the whole structure is a marvelous monument to the industry, the genius and the ability of the architect. We may sit down and compose criticisms on it, point out where it might have been bettered, what should have been left undone, what had better have been done, but it is another thing to have had to cope with the jealousies of contending authorities, to accommodate more courts than were called for in the original plan, to alter, to change, to make new devices, to suit all, and oneself least of all. This is what the practice of modern architecture largely consists in, especially in work of a public or political nature. If the New Law Courts of London are not flawless buildings, they are at least great enough and important enough to command the thoughtful attention of every student.

The Imperial Institute, at South Kensington, is the newest large public building in London. Built from the designs of Mr. T. E. Colcutt, it is a notable addition to the large buildings of London, though not to be classed with the two structures I have just spoken of. The building was intended to typify and represent the unity and majesty of the British Empire, and both popularly and professionally is regarded in London as completely failing to accomplish the specific purpose for which it was erected. I should imagine the satisfactory accomplishment of this task entirely beyond the capabilities of any English architect, living or dead. The idea is so vast, the meaning so tremendous and so awe-inspiring—I try to convey the British conception—as to be quite untranslatable into architectural form. The structure consists of a central pavilion, with galleries

connecting a smaller pavilion at either end, beyond which are to rise other buildings not yet carried out. Immediately behind the central pavilion is a large tower that is condemned on the grounds just adverted to, and which I will maintain to my last breath are most unjust to the architect. Possibly the error lay in the style, which is a rich English Renaissance, for certainly the architect of the Arc de Triomphe, in Paris, succeeded unmistakably and admirably in expressing the idea of French imperialism and grandeur. A more stately style of architecture was, perhaps, needed here, for there can be no doubt whatever but that the architect has fritted away many of his opportunities by the elaborateness of his ornament and the breaking up of his surfaces. The design is distinctly ornate, save the tower, which is bold and fine and is crowned with a dome, unfortunately not of stone, surmounted by a lantern. It is quite justifiable to find fault with the immense quantity of detail applied to this structure. Very good in itself, there is quite too much of it for the London climate, and in a very few years its ornamental value will have entirely departed. Already, though the building has scarcely been more than opened, much of it has blackened so as to be quite indistinguishable, and each year will add more and more to the same misfortune. The corner turrets on the pavilions are also errors of judgment, being small decorative affairs, almost Indian in design, hardly in keeping with the style, and detracting from the dignity of the design. The introduction of red brick in the secondary towers and in the inner walls of the arcade on the first floor is another striking instance of the tendency of the architect to vary his design and his material from pure delight in change.

The British criticism on this building that it does not represent the glory of the British Empire may be true enough, but at least this cannot be affirmed of the lions that are placed on each side of the entrance steps. The great point of these beasts is the manner in which they sniff the air. Their nostrils have a slightly upward turn that raises them

among ordinary animals and endows them with an air of utter respectability and contempt for mankind in general, that must, I am very sure, largely typify the British Empire, though the building fails to do so.

Or the other new public and semi-public buildings in London there is little to be said, save that none of them approaches in interest those that have been named. The new Admiralty offices are of commonplace design, treated with pavilions at the ends and in the centre, and with engaged columns of buff stone against a brilliant red brick, a combination that in its unfinished state is more noteworthy for its color than for its design. The new Record office, in Chancery lane, follows very closely the design of the older structure, and is, in consequence, a somewhat notable instance of good taste on the part of the architect. Mr. Waterhouse's building for the City of London Guilds, a technical institute, at South Kensington, avoids the too rich detail with which his nearby Natural History Museum is ornamented, and in the severity of its forms not unnaturally suggests the mechanical and practical arts taught within it. In the additions to the National Gallery, a more severely classical design than that of any other public building in London, the architect has had the extremely difficult task of having to piece a new part on to an old structure of rather tame if refined design, and which he has performed as well as the conditions of the case permitted.

In business buildings London offers examples of every sort, the good and the bad, the old and the new, with a preponderance of both the bad and the old. Yet with so many horrible examples of what not to do the modern architect often fails in his commercial designs. Usually he errs in putting on as much ornament and detail as he can, as though architecture began and ended with this silly process. A whole colony of such structures has arisen in Arundel street and Norfolk street, Strand, and the adjoining streets, which rather suggest delicate pieces of pastry, or the toy houses of children, than buildings applied to the stern realities

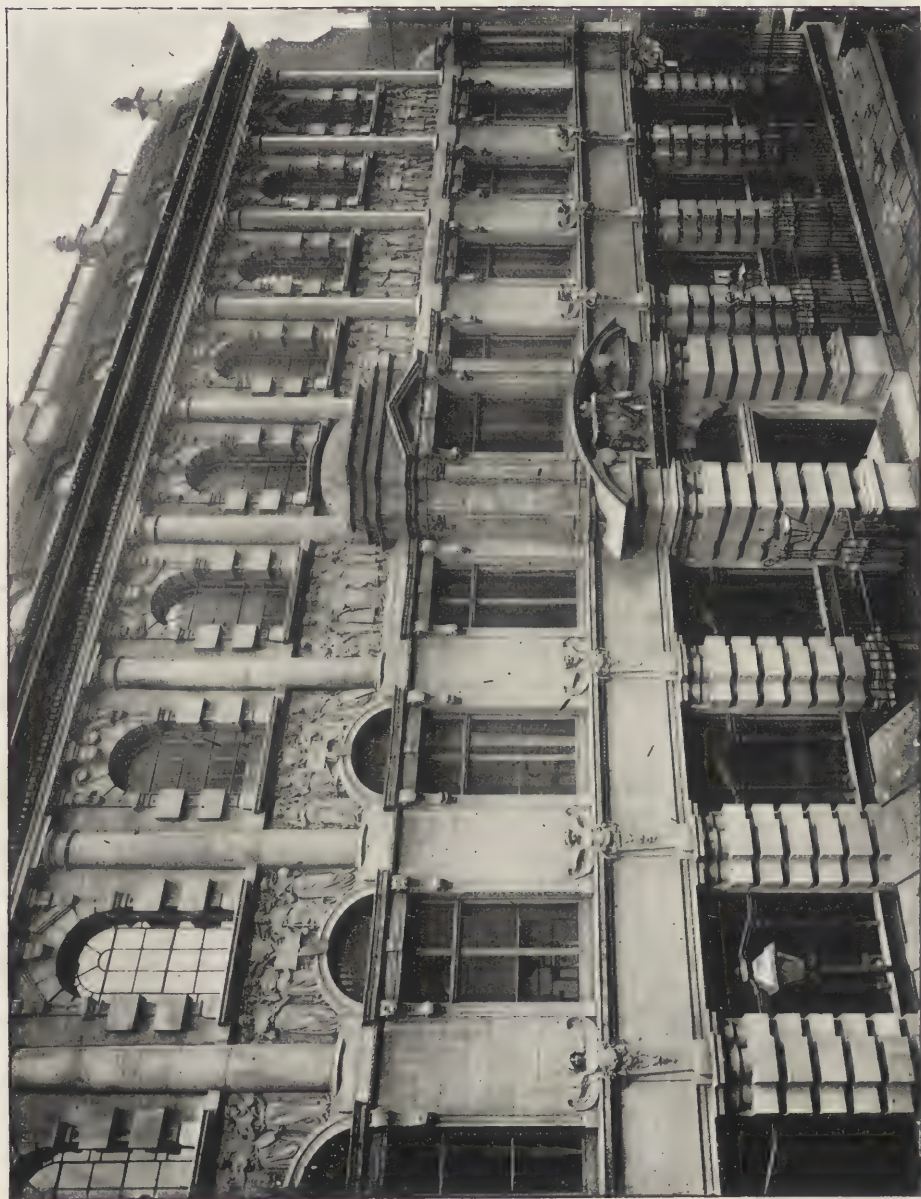
of business. It is impossible to deny a picturesque effect to these streets, but surely the more picturesque a business building is, the more varied its outline, the more elaborate its detail, the further it departs from the purposes for which it was built, and the less satisfactorily, to tenants and to passers-by, does it fulfill the functions for which it was created. There is a limit beyond which the picturesqueness of a business building cannot be pushed with reason or to advantage. A small office building in Chancery lane, opposite Lincoln's Inn gateway, is a striking instance of a highly picturesque effect obtained by the simplest means, and, if that quality is to be used in structures of this class, in an entirely satisfactory manner. It is not more than four stories high, treated throughout with the utmost severity, with plain mullioned windows and simple gable, a very charming little structure, entirely opposed to American ideas of an office building, but an admirable one, and, in its way, entirely successful. Another interesting design is the building Nos. 12 and 13 Poultry. This is a really notable piece of work, though the results are obtained by the simplest means. The ground floor, being given up to shops, has been entirely neglected in the design, a procedure perhaps justified by the uses to which this floor is put. The five upper floors form a single design, with a series of mullioned windows in the centre, with terra cotta sculptured panels between them, the blank wall spaces being massed on either side. The sixth floor is continued as a square topped gable above the side roofing lines, and is finished with a steep sloping roof. The color is a rich dark red, doubtless darkened by exposure, and helps very much in producing the extremely restful and charming effect of the building.

It would be tedious, and perhaps unnecessary to criticise in detail the business buildings of London, or even the more notable ones. It is often a wearisome task to look out the best examples, for they are widely distributed and not seldom almost hidden from the public's eye. One of the most



CITY BANK BUILDING.

T. F. Colcutt, Architect.



BUILDING OF THE INSTITUTE OF CHARTERED ACCOUNTANTS.

John Belcher, Architect.

striking illustrations of this is the new building of the Institute of Chartered Accountants. Used partly by the Institute, partly as an office building, this edifice is of more than ordinary interest, and in the beauty of the design, the originality of the treatment, the exquisite nature of the detail, is one of the most notable buildings in London, public or private. Yet it is hidden in a maze of narrow streets where the average passer-by would never stop to look for it, where even those seeking it may miss it, and where its value both to itself and as an ornament to the city is almost totally lost. But the architect is not to be censured for his unfortunate site, and the Institute is rather to be praised for the public spirit it has shown in putting up so monumental an edifice and sparing neither cost nor labor to perfect it, knowing there could be no adequate return in artistic enjoyment from their enterprise. Notwithstanding that a good deal of space is given up to offices, the building is essentially a home—I should rather say a palace—for the Institute of Chartered Accountants, and so a rich style of architecture is appropriately and naturally employed. As the assistance of Mr. Thorneycroft, R.A., was secured for the sculpture, it need scarcely be said that in the skilled hands of Mr. John Belcher, the architect, a truly notable building has been secured. The main portion is but three stories in height; a basement, treated with large blocks of cut stone, rather unnecessarily carried directly across the supporting columns—without question one of the errors of the design—an intermediate story, plainly treated; and an upper story that has the value of a frieze, richly treated with Doric columns inclosing rusticated arched windows. Perhaps the most striking thing in the design is a carved frieze carried around the entire building immediately below the windows of the third story. In a sense it appears out of place, since a frieze can never be anything but a frieze, even when it is broken, as in the present instance, by columns passing through it, and naturally belongs under a supporting or architectural cornice. In departing from the established cus-

tom Mr. Belcher has undoubtedly succeeded in giving a fresh note of originality to his design, though it must be admitted that the value of the frieze is considerably lessened by its position, which is a little too high for its fine merits to be properly seen. Too much praise cannot be given for the exquisite detail in this building, now in the full glory of fresh carving. The curved lines are admirably handled and the strong, vigorous foliage is thoroughly in keeping with the monumental character of the building. Internally the building is not so happy as without. The detail, while well worked up, is sometimes heavy and the proportions unpleasing; but taken as a whole this is one of the most interesting of the newest of London buildings.

The new building of the Metropolitan Life Assurance Society, by Mr. Aston Webb, is an office building pure and simple, and, barring some eccentricities in detail, is an eminently successful and interesting design. It is four stories in height, with a sub-basement, each floor being treated with large segmental windows of similar design, with a broad plain frieze between each floor. A charming oriel over the entrance on the corner relieves the somewhat severe lines of the building and gives a needed note of emphasis. The predominating element in the design is the horizontal, and it is an interesting example of the successful way in which this may be handled. Notwithstanding that the horizontal lines are emphasized by the dividing freizes with strings on either side, the effect is entirely united and uniform. It is true there are four stories here divided in a most unmistakable fashion, but there is no breaking up, no piling of parts one on the other that may so frequently be seen in American designs into which the horizontal enters. The explanation is easy. The building has a fairly large frontage and is low, the elements that naturally call for horizontal treatment. More than this, the design is entirely harmonious; it is not four designs heaped one on the other, but a single design divided by four lines; the distinction is very great and the success of the



COMMERCIAL BUILDING.

R. Norman Shaw, Architect.



METROPOLITAN LIFE ASSURANCE SOCIETY'S BUILDING.

Aston Webb and Ingress Bell, Architects.



PENINSULAR AND ORIENTAL STEAMSHIP COMPANY'S OFFICES.

T. E. Colcutt, Architect.



Queen's Gate.

RESIDENCE.

R. Norman Shaw, Architect.



Queens Gate

RESIDENCE.

R. Norman Shaw, Architect.

building depends on the way in which this has been done. London contains many other buildings, some good, some bad, with emphasized horizontal lines, but it is seldom that one discerns an element of discord. The principle of unity is well understood, and this is one of the important lessons that current English architecture can teach American architects.

Interesting as many London commercial buildings are they scarcely approach in interest the domestic buildings. These are of amazing richness and variety of design, and here the English architects appear, as a whole, at their best. Doubtless the more abundant opportunities for the erection of houses, as distinguished from business premises, has a good deal to do with the ability to treat them in an artistic and interesting manner; but for whatever reason they attain, in this class, an extraordinary merit of design that justly entitles them to the very highest rank among the architects of the world. Of the many English architects engaged in actual practice none has produced more notable domestic buildings than Mr. Norman Shaw. I need not undertake to argue for his position among living English architects, though it can scarcely be questioned but that he has influenced the building art of his time in his country more largely than has any other man now living. For our present purposes we may content ourselves with the houses he has built, delight in their fine forms, enjoy the skilful manner in which most artistic effects are obtained with the simplest means, note how little ornament is used and how, in consequence, the style he has made his own is thoroughly fitted for the harsh climate of London. That such a man should have his imitators is without question, and quite as natural is it that his copiers should, most of them, entirely fail in approaching him in the quality and beauty of his designs.

The houses of Mr. Shaw are notable, as has been hinted, for the obtaining of architectural effects with the simplest materials. Ornament is the least important servant he calls to his assistance, and not unfrequently he dis-

penses with it altogether. I would not say that those designs in which the least detail is employed are the best things he has done, but his thorough mastery of design and his keen artistic feeling enable him to produce extraordinarily interesting results of the very highest type of fine domestic building, where a less sensitively artistic man would have only failure and dissatisfaction. The newer parts of London contain many interesting groups of houses. Mr. Shaw is himself numerous represented in characteristic and striking designs, but always with the utmost sobriety and self-control. Mr. Ernest George has impressed his personality upon one notable district and has contributed to the adornment of many others, while other architects, in their own special way, have added their quota to the interesting new dwellings of London. Close after them have followed the speculative builder, imagining architecture to be a mimic art of variation or supposing that a gable, or a columnated entrance porch, or a small shallow bow window, or other elementary feature was the end, the aim, the body, the substance of all that is good and great and enduring in architecture.

Mr. George's work is wholly distinct from that of Mr. Shaw, depending as it does more on detail and a general richness of design for its effect. If there is sometimes a greater variation of surfaces than seems always necessary, if there is an enrichment of parts and a wealth of ornament, it is at least satisfactory to feel that it is always good and very often intensely and charmingly picturesque. This, indeed, appears to be the aim of the architect, and he secures it with the help of a powerful imagination, with immense fertility of resource, and a fine ability in the disposing of an abundance of material in an entirely satisfactory and eminently happy manner. It does not, it is true, always escape from the dangers that attend the frequent use of detail, but his work is always marked by a depth of feeling and an artistic perception that renders his lapses towards superabundance admissible, if not wholly pardonable.

If the traveler in London will take



HARRINGTON GARDENS.

Ernest George & Peto, Architects.



HARRINGTON GARDENS—GARDEN VIEW.

Ernest George & Peto, Architects.



ENTRANCE, HARRINGTON GARDENS.

Ernest George & Peto, Architects.

the trouble to compare the older parts of the city with the newer he will not long remain in doubt as to the value of the work English architects are now doing. And if he will go further than that and compare these new districts with the best new districts of Paris, or of New York or of Boston or of Chicago, he will speedily discover, likewise, that in the new parts of London he is standing before an architecture of a type wholly strange and new to him, an architecture which while not always great is so frequently interesting and of such marked originality and power as to be quite distinct among the domestic architecture of our time. Take, for example, the streets in the neighborhood of Russell square, or even the older streets in the neighborhood of Hyde Park, and compare them with the groups of houses in Harrington Gardens, in Collingham Gardens, with Mr. Shaw's houses in Queen's Gate or on the Chelsea Embankment, with the newly-built section in and around Cadogan Square, with Kensington Court Gardens, or with the artist homes in Melbury road, and he will realize, as it is otherwise impossible to realize, just what English architects of the present day are doing for their metropolis. I do not mean to intimate that all the dwellings covered in these districts are of the same quality or interest; many are most distinctly not; many others are but poor copies; but take the best work in its best examples and a prodigious quantity of very good buildings may be seen.

It is a pity that when people build they do not always employ the most competent architects. The success achieved by the leaders in the new movement has provoked, as I have repeatedly said, a host of copiers. It is this inferior work that predominates in the new localities, or rather which surrounds the kernel of good buildings which marks the beginnings of many of the new districts. Whether in time to come the progress of the inferior architecture and its indefinite multiplication will cause a revulsion towards a new series of models I am not prepared to say. It is quite within the range of possibilities that street after street of

variegated designs on the same base will become more wearisome than the dull streets so characteristic of the older parts of the city. But surely each year, in London as in America, brings with it a wider appreciation of the meaning and possibilities of architecture. It is true there are no indications of such an appreciation among the British nobility so far as their town houses are concerned. Though many magnificent country seats have been built by the leading living English architects the nobility still keep up London houses of most intolerable ugliness, and perhaps until this cultured class awakens to its responsibilities in this respect the general spread of the new movement in London can never be complete. But though the great ones of Britain may be indifferent to the external architecture of their city houses a larger public must, in time, learn the value of a real architecture.

These very imperfect notes on a few notable buildings and tendencies in current London architecture have already exceeded reasonable limits, and no word has yet been said on the supremest form of that architecture. I mean the churches. We do not know, in America, the splendid ecclesiastical structures that have been built in London within the last ten or fifteen years. Mr. Pearson clearly takes the lead in this work, though the churches of Street, of Bodley, of the younger Gilbert Scott and of Sedding should not be overlooked. The churches erected by this quintette of architects are, taken as a whole, real churches, characterized by a true churchly feeling, a feeling that, in many instances, permeates the whole design and gives it a life of its own quite apart from the forms used. Mr. Pearson has been especially happy in giving this effect to his churches, and while I do not always find his exteriors as expressive nor as inspiring as his interiors, it is impossible not to feel their originality and true churchly nature. Most of these churches are the result of the High Church movement, which in them has erected a splendid monument to itself that will last while one brick remains upon another. For most of these new



RESIDENCE OF W. BURGESS.

W. Burgess, Architect.



COLLINGHAM GARDENS.

Ernest George & Peto, Architects.

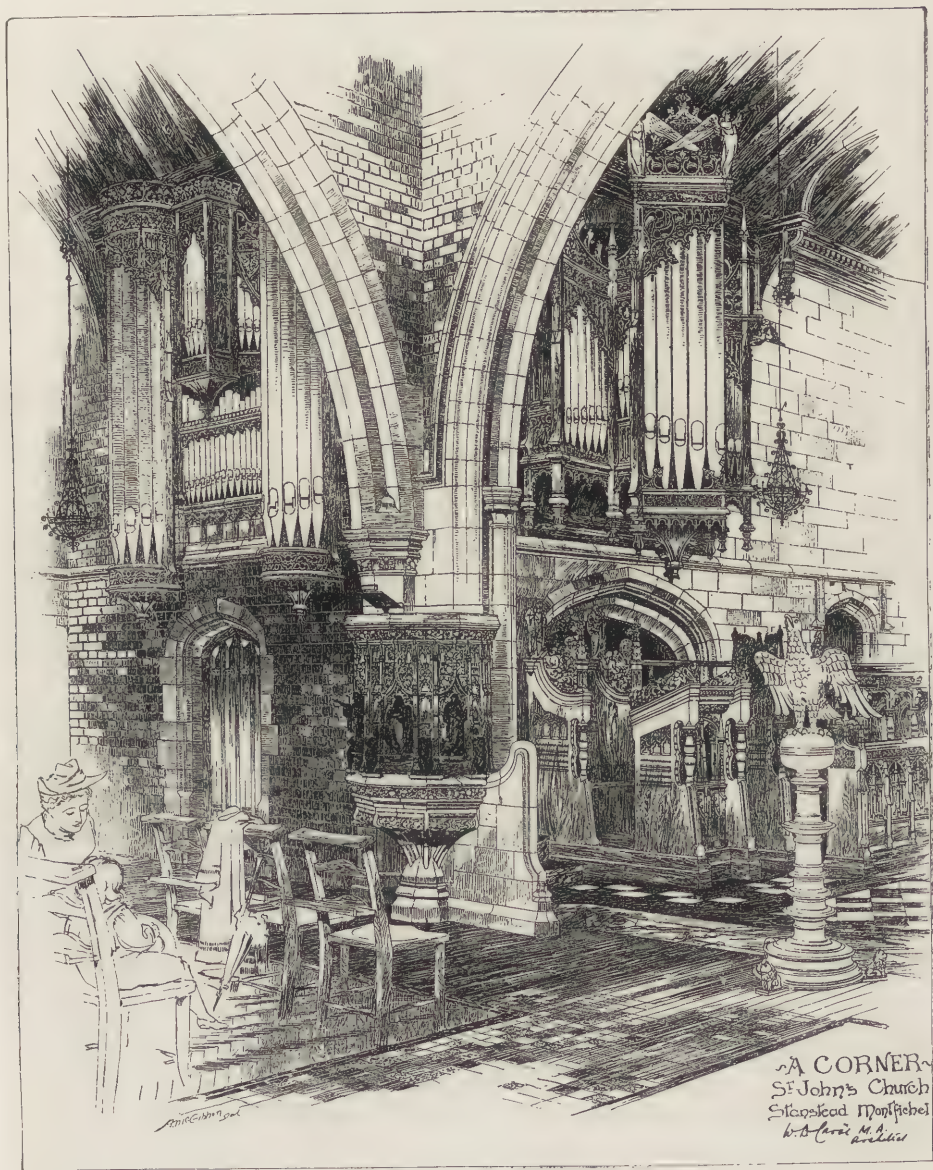
churches are in brick, stone sometimes not even appearing in the detail, save in the window tracery. Yet though brick is the most difficult material with which to obtain monumental effect there is no poverty in the design, either external or internal.

The lesson these churches teach is unmistakable. The architect is master of his work. Mr. Pearson, for example, never copies mediæval forms, never reproduces mediæval churches, but builds a modern nineteenth century church with the materials handed down from the middle ages. It is not the least remarkable feature in current English work that an architect in active busy practice can produce buildings of such a character. It shows that English architecture—yes, English mediæval architecture—contains elements of vitality with which as yet we on this side of the Atlantic are scarcely acquainted.

There is no more enjoyable pilgrimage to be made in London, crowded as the city is with interesting and pleasurable things, than a visit to its modern churches. And if one would carry away with him from London a lasting impression of a truly great modern church, a church whose strength is its fine and beautiful architecture, where effects are not sought by heavy forms, by costly mosaic, by elaborate frescoes, by the hundred devices we imagine necessary to an artistic (?) church in America; but a church in which the architect has drunken wisely and deeply at the inexhaustible font of mediæval imagination and beauty, then may I be permitted to suggest a trip to the new Catholic Apostolic Church, Maida Vale, the latest church built by Mr. Pearson, and which happily crowns the long series of notable ecclesiastical buildings carried out by him.

Barr Ferree.





A CORNER
St. John's Church
Skarstad Montpelier
Wm. C. Smith M.A.
1881



No. 185 Queens Gate, London.

THE HALL.

R. Norman Shaw, R. A., Architect.



London, England.

NO. 4 PRINCE'S GARDEN.

E. P. Warren, Architect.



A FRENCH DINING-ROOM.



FRENCH TABLE.

A FRENCH DINING-ROOM OF THE UPPER MIDDLE-CLASS TYPE.

IT is only in comparatively recent times that the dining-room, properly so called, has been in existence in France. Our ancestors, turbulent, fiery and constantly on the move, were satisfied with the most rudimentary household arrangements, and, though they occasionally displayed a taste for luxury and sumptuous surroundings, they had no conception of what we call comfort.

In the fifteenth century, the castles were without permanent furniture. The beds, tables, settles, chests and so forth were transported in the chariots or on the backs of pack-horses every time the suzerain went from one place to another. It is true, the castles contained large halls, in which the princes and knights entertained their friends and retainers; but these apartments had no precisely defined character and, in any case, were seldom used for anything but grand banquets. These feasts often lasted half a day, and if not distinguished by the delicacy of

the viands, they at all events testified to the robust appetites of our forefathers. Next day, however, the giver of the feast resumed his ordinary habits; the banqueting halls were shut up and the plate, ewers, cups, etc., carefully packed away in chests. The lord of the castle almost invariably ate alone in his room or even in the kitchen. Besides, he usually fed hastily, somewhat like an animal, his mind being filled with exciting thoughts of fighting, of jousts, or of the chase.

This state of things continued for very many years, and it is not in the least astonishing that it should have been so. In France, the sentiment of family intimacy is of relatively recent date, and this sentiment could alone make the dining-room cheerful, pleasant and homelike—that is to say, as we conceive it at present.

Louis the Fourteenth and even the voluptuous Louis the Fifteenth took their repasts in their cabinet, and so recently as a hundred years ago, the greater number of houses were without any room exclusively devoted to

the pleasures of gastronomy. It is to be noted, however, that it was in the eighteenth century—at the time when Brillat-Savarin placed cookery on a higher level and established the *Physiologie du Goût*—that the dining-room underwent a transformation, was first furnished and decorated in a style peculiar to itself, and acquired, rapidly and surely, a right of citizenship, so to speak, in France. Some of the dining-rooms of that period, although far from perfect, soon became famous, and, thanks to the chroniclers of those days, we know many details as to the way in which they were arranged. We may cite, as an example, that of the Château de Gaillon, celebrated for its good cheer, and that of the beautiful Madame de Lauraguais. The dining-room of this great lady was spacious, oval in shape and ornamented with mirrors which, in those days, were considered exquisite. The furniture matched the tapestry and was decorated with Chinese trees, painted on a white ground.

Curiously enough, the dining-rooms of that epoch were profusely decorated, and yet the furnishing was, as a rule, remarkably simple. In 1785, four years before the Revolution, one of the dining-rooms of great repute was that of the Princesse de Lamballe, which did not contain a single article of furniture of real value. There were a score of chairs, painted yellow and covered with crimson plush; a table, a chest of drawers with a marble top, a fireplace with fender, shovel and tongs, and lastly, a crimson velvet screen and a cut-glass chandelier. That was all, and yet the Princesse de Lamballe was one of the most stylish women of the time and a bosom friend of the Queen.

To-day, even a lower middle-class family would be dissatisfied with such a bare, commonplace dining-room. We have become harder to please—perhaps too much so. Since the reign of Louis Philippe the thing has been pushed to an extreme. It was about that period, in fact, that pictures, sculptures, plate, china, cut-glass, silver, and even articles of furniture utterly foreign to the service of the table began to be crowded, *au petit bonheur*, into the din-

ing-rooms of some of the more vain of our fellow-countrymen. This exaggerated fashion has, fortunately, been confined to certain houses remarkable for the bad taste of their furnishing. Nothing should be carried too far, for an excess of display is detrimental to true luxury. In order to be in the fashion and in good taste, it is not necessary either to pile up a heterogeneous collection of useless objects, or, on the other hand, to limit oneself to the severe, icy simplicity of the Middle Ages. *In medio stat virtus.*

Upon the whole, the French dining-room of the present day seems to be perfect; it is pleasing to the eye and comfortable withal. The various articles of furniture in it are attractive, useful and commodious. They well convey the idea of what a dining-room ought to be, namely, a room that is not merely a refectory, but a place where, at meal times, all the members of the family meet and enjoy the pleasure of being together. The dining-room is the room for intimate family communion—even more so than the drawing-room—and modern society has, generally speaking, thoroughly grasped this fact.

The typical dining-room here illustrated is taken from the middle-class of French society—that class which we call the *bonne bourgeoisie*. We may state here that this dining-room costs about ten thousand dollars and will serve as a model for persons with a yearly income of from fifteen to twenty thousand dollars.

The arrangement of this room is as perfect as it could possibly be; it responds completely to what is required, being very commodious and at the same time luxurious and stylish. Assuredly, the room is not grand or imposing, but its aspect is highly pleasing, and it possesses the brightness, variety and comfort that are so necessary in things intended for private and constant use.

While this dining-room is, in reality, but one apartment, it is composed of three rooms entirely separated from each other by tapestry curtains. The room which one enters first is that in which the meals are served. When the

repast is at an end the company passes through the hangings to the second room, where the men remain to smoke, while the ladies proceed immediately into the third room, in which tea, coffee and liqueurs are served.

Dining-rooms of this kind are invariably located on the ground floor. They look out upon a garden, and daylight reaches them through brightly-colored stained glass windows, bearing pictures of birds, flowers and other objects calculated to charm and enliven, rather than to instruct or to stir the feelings. At night, the room is lighted by wall-brackets, by lamps placed in the midst of green plants, and also by a central chandelier. M. Gerspach, a fellow-countryman of ours, has very justly said that the designing of a chandelier is a work of art. It must not only be suitable for its main purpose—the illumination of the room in which it is placed—but must also be an ornament by day; it must hang in such a way as not to interfere with the view of the wall decorations or attract notice to itself to the detriment of the other sources of light. The Venetian glass chandelier appears to us to be the best for dining-rooms. It is light, shapely and elegant, while all its parts—sconces, twisted branches, reversed striated leaves and delicately-cut roses—receive an equal share of light. In the evening, the Venetian style of chandelier sheds a delicious light, without any strong, discordant reflections. In the day time it wears the aspect of a chiseled stalactite, radiant and glittering.

The dining-room which we present as a type contains two Venetian chandeliers—one in the part where meals are served, and the other in the part in which coffee and liqueurs are partaken of. The intermediate portion, which, as already stated, is used more specially as a smoking-room, is lighted by a lamp of somewhat fanciful appearance and worked after the Oriental style. Its base is gilded; it is enameled with white, blue and red flowers, and bears in blue letters, the following classic inscription taken from the Koran:

“God is the light of the Heavens and of the earth. This light is like that of a torch placed in a crystal, a crystal resembling a gleaming star.”

We have said that the dining-room is separated into three parts by tapestry hangings. These are very important things and their selection ought to be a matter of great care. In choosing them, as also the rest of the decorations, and especially the stained-glass windows, it is essential to avoid dull tints, gloomy subjects and lugubrious compositions. Illustrations of suffering or abnegation, and of deep philosophical conceptions, would be out of place here. Moreover, tapestry-making is essentially a sumptuary art and is inseparable from the idea of brightness and suppleness. Dining-room hangings should be floating and undulating, yielding unresistingly to the pressure of the hand that pushes them apart and returning the next instant to their former position. They should represent gay and brilliant scenes, such as mythological subjects, episodes of profane history, allegorical images, the meeting of two armies, a hunting scene or a triumphal procession; these should be the adornments of decorative tapestry, the true and only tapestry.

The decoration of the walls ought, likewise, to be bright and light in tint. On no account must it be heavy or exaggerated; a few panels in the style of door curtains, and two or three pictures, landscapes or sea-pieces are quite sufficient. Those hackneyed representations of still life, such as the dozen of oysters with a glass of white wine and a lemon, and others of the same kind, are now entirely out of date.

A dining-room takes its character in great measure from its sideboard or sideboards, and from its fireplace. Ought the sideboard and the fireplace to be in the same style? We say no. Still, though different in style, it is necessary that they should harmonize one with the other.

In the kind of dining-room which we are describing, it is very evident that the articles of furniture actually used for the table are necessarily placed in the first part of the triple apartment. However, the three rooms really forming but one, as already explained, it is perfectly allowable to furnish the two other portions with plate-stands, cupboards, credence-tables—in fact, any



FRENCH FIREPLACE.



FRENCH FIREPLACE.

furniture suitable for a dining-room. On the other hand, the fireplace is always situated in the first division of the room.

The fireplace of the dining-room now under notice is very handsome and in the best taste. The three caryatides which serve as a frame to the two panels are carved with exquisite delicacy, while the panels themselves are painted with a clearness of tone that is truly charming. On one of them we see an eager huntress on a white horse in full gallop. On her right wrist is perched a falcon, ready to dart after its prey. On the other panel a mounted hunter, wearing a plumed hat, is holding aloft an ivory horn; his attitude is similar to that of the huntress. Both are evidently represented at the moment of setting out for the chase. We see them once more on an exceedingly beautiful bas-relief, where they are following a stag hard pressed by the dogs, while a huntsman, with cheeks as full as those of one of Boucher's cupids, is blowing a triumphant death-flourish on his horn. The chimney-back, with the arms of France and Navarre, is also very fine.

We have said that a dining-room is distinguished principally by its fireplace. Carrying this dictum to an extreme, a friend of ours said gravely to us one day, "Show me the fireplace of any dining-room and I will tell you immediately to what class of society the owner belongs." Our grandfathers apparently understood this, and when we visit old manor-houses the first object that attracts our attention is generally an immense fireplace, splendidly sculptured and occupying nearly all one side of the room. We think, therefore, that it will not be uninteresting to reproduce a second chimney-piece—one which we have seen in a modern Paris residence. This chimney-piece is in the Renaissance style, after the manner of du Cerceau, the celebrated cabinet-maker, who, as the reader is doubtless aware, was a contemporary of Catherine de Médicis. The central painting is by Tanguy, and represents iris, roses and peonies, forming beautiful gradations of color. Underneath stands a fine vase, on the base of which

recline two genii, who are contemplating each other with a mysterious smile. Still lower down there is an Eros in a crouching position warming his chilled arms. The two large figures on the right and left represent spring and autumn; the former is pressing a bunch of flowers to his bosom, while the latter is taking fruits from his girdle.

Let us remark, before we speak of the furniture, that these chimney-pieces are amply decorative in themselves and it would spoil their effect to ornament them with vases, china, candlesticks or any other object whatever.

Modern French furniture, while admirably adapted to its purpose from the point of view of administering to the desire for comfort, consists to a great extent of reproductions of styles of by-gone days. These copies are extremely clever—one might say too clever. No original nineteenth century style can be said to exist, or rather, the style of our time is an absolutely unbounded eclecticism. The public, so far, seems indisposed to accept any new fashion. At the same time, some of our leading makers have attempted to give an original form to certain articles and some of our wood-carvers have endeavored to infuse a little novelty into our decorative panels, which, as will be seen, are chiefly illustrative of religious subjects. These artists have more especially essayed to represent bacchanalian scenes, but as it is difficult to keep within bounds in this kind of subject, their success has not been equal to their talent. The same thing may also be said of the attempts at originality made by our cabinet-builders.

The French public not only declines to welcome any new style in furniture, but also refuses to adopt any special old style, save that there is perhaps a slight preference for Norman or Renaissance. The figure here shown represents a large dresser of the fifteenth century (the name *dressoir* was changed to *buffet* in the sixteenth century). This article was produced in the workshops of M. Boverie, one of



FRENCH DRESSER.

the best cabinet-makers in France. The central panel of the hutch, in which there is an ingenious secret lock, depicts, in bas-relief, the well-known scene of Saint George slaying the dragon. The two panels on either side have escutcheons carved on them, one being the ermine of Brittany and the other the fleur-de-lis of France. These escutcheons also appear on four of the six upper panels. The open-work carving of the gallery on top is surpassingly graceful; the gallery is strengthened by handsome pendentives representing intertwined leaves and angels.

This sideboard is placed in the second part of the dining-room we are now describing. In the third part there is another dresser, modeled after the style in vogue at the end of the fifteenth century. It is divided into a number of panels covered with escutcheons and ornamentation treated in a really masterly manner. On the rectangular bas-relief at the bottom are figures of Saint Anne, the Virgin Mary and the Infant Jesus. The two pendentives on the upper gallery have a most agreeable effect.

The dressers of olden times were decorated with but little ware. The Royal dresser of Philip of Valois merely displayed to the gaze of the Kings of Majorca, of Scotland, of Bohemia and of Navarre, whom he had invited to a grand banquet, two gilt quart jugs, an ewer and a leathern bottle, the last named being filled with wine for the King and his illustrious guests. However, on the occasion of the feast given by Charles V. to the Emperor of Germany, the Royal dining-hall contained three sideboards, one made of gold, another of silver, and the third gilded, each being exclusively adorned with plate of the same metal as the sideboard itself.

Sideboards nowadays are decorated with a great variety of articles. Venetian glassware, Bohemian cut-glass, old French goblets, porcelains by Bernard Palissy, etc., serve admirably for this purpose. But, unfortunately, these are very costly things, so that the French *bourgeoisie* must perforce be content to have only one or two of such

rare articles and to surround them with glass, porcelain and silverware of modern manufacture.

In addition to the sideboard shown in our first illustration, the first portion of the dining-room in question has a large, low one, standing on feet, in the sixteenth century style. This buffet has two leaves, separated by a post. The uprights of the framework are ornamented with balusters which support a figure and rest upon a projecting moulding. The space between the feet is filled by a panel. On the panels are carved scenes from the Passion. On the left-hand leaf we see Jesus before Herod; on the right-hand one, the Scourging of Christ. On the post there is a representation of Christ on the Cross, with Saint John and the Virgin Mary on either side. On the left-hand lateral panel there is a figure of the Unbelief of Thomas, and on the right-hand one, Jesus and Mary Magdalene.

Before quitting the subject of sideboards, let us refer to the disappearance of a very original style of decoration that was formerly held in high esteem in France. We may perhaps in this way tempt some enterprising American cabinet-maker, and it is possible that a certain amount of good will result. Here is the point we allude to. The French cabinet-makers of former days used to manufacture articles of furniture which they then delivered to image-makers, who sometimes employed glass in the decoration thereof. They prepared pastes of glass of various colors, in plates or shaped like polished, uncut stones, and under each piece they placed strips of beaten silver. Designs were painted on the glass in oil mixed with wax, turpentine and red ochre. The work was then baked at a moderate heat. Upon these grounds, somewhat soft, goldleaf was applied. After hardening, the gold was brushed away and only the ornamentation remained. The plates were then stuck on the piece of furniture. The gilded ornament on the surface threw a shadow upon the silverleaf underneath, thus bringing the design into relief and giving it an elegant appearance.



FRENCH TABLE.

Other grounds were painted in various colors and set off by gilding under greenish white glass. Only sideboards and other large pieces of dining-room furniture were thus decorated; we may, however, note in passing that the altar-screen of Westminster Abbey was ornamented in this manner, probably by a Frenchman.

It need not be said that the furniture of our typical dining-room comprises several tables, as well as chairs of two or three kinds. These tables and chairs do not all belong to the same epoch, but having been selected by a person of taste, they do not in any way offend the eye. And yet, perhaps, the principal difficulty connected with furnishing is to combine the two qualities of variety and harmony, without which conditions no apartment can be really handsome and pleasant.

We reproduce a photograph of a rectangular table placed on a frame which rests at each end on a fan-shaped panel supported by a foot. The traverse connecting the feet sustains two balustered pilasters and two demi-balusters bearing an upper traverse which goes from panel to panel. The frame, which is profiled with a broad torus carved with palm leaves, is broken by two cartouches on each of its longitudinal faces and by one cartouche on its end faces. On these cartouches female figures recline, each representing one of the cardinal virtues, Faith, Hope and Charity, together with justice, prudence and strength. Each panel is composed of a caryatide showing a woman in the act of raising her hands to bunches of fruit, between two mythological figures with wings, their lower parts being in volute, while their heads sustain baskets containing apples, figs and grapes. Seated on the loins of each of these figures is a little genius, with curly locks and wearing a roguish expression on his face. The feet are in the form of two hippocampi, with tails curled into the shape of hunting horns, uniting above a mask. The two pilasters of the traverse are ornamented with rams' heads.

The other tables are much more

simple, but are made attractive by their covers, which are exquisite both in design and coloring. One of them is an exceptionally fine imitation of a tapestry by Jean Lefevre, depicting a young matron attended by her maids, and it is delightful to observe the happy combination of the colors, the contrasts of dark, reddish and fair hair, and the dazzling hues of the dresses.

We also reproduce three photographs of chairs. The first is in the Louis

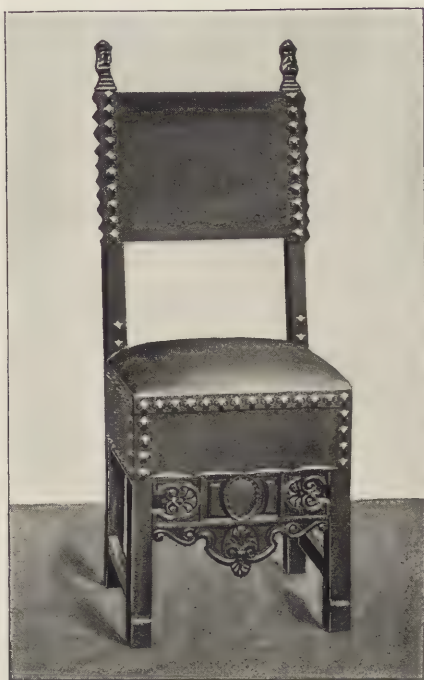


LOUIS XII. CHAIR.

XII. style, and bears the arms of France and Brittany. Above, round the ermine and the fleur-de-lis, is twined a Franciscan girdle. On the front of each arm an old man is



FLEMISH CHAIR.



ITALIAN CHAIR.

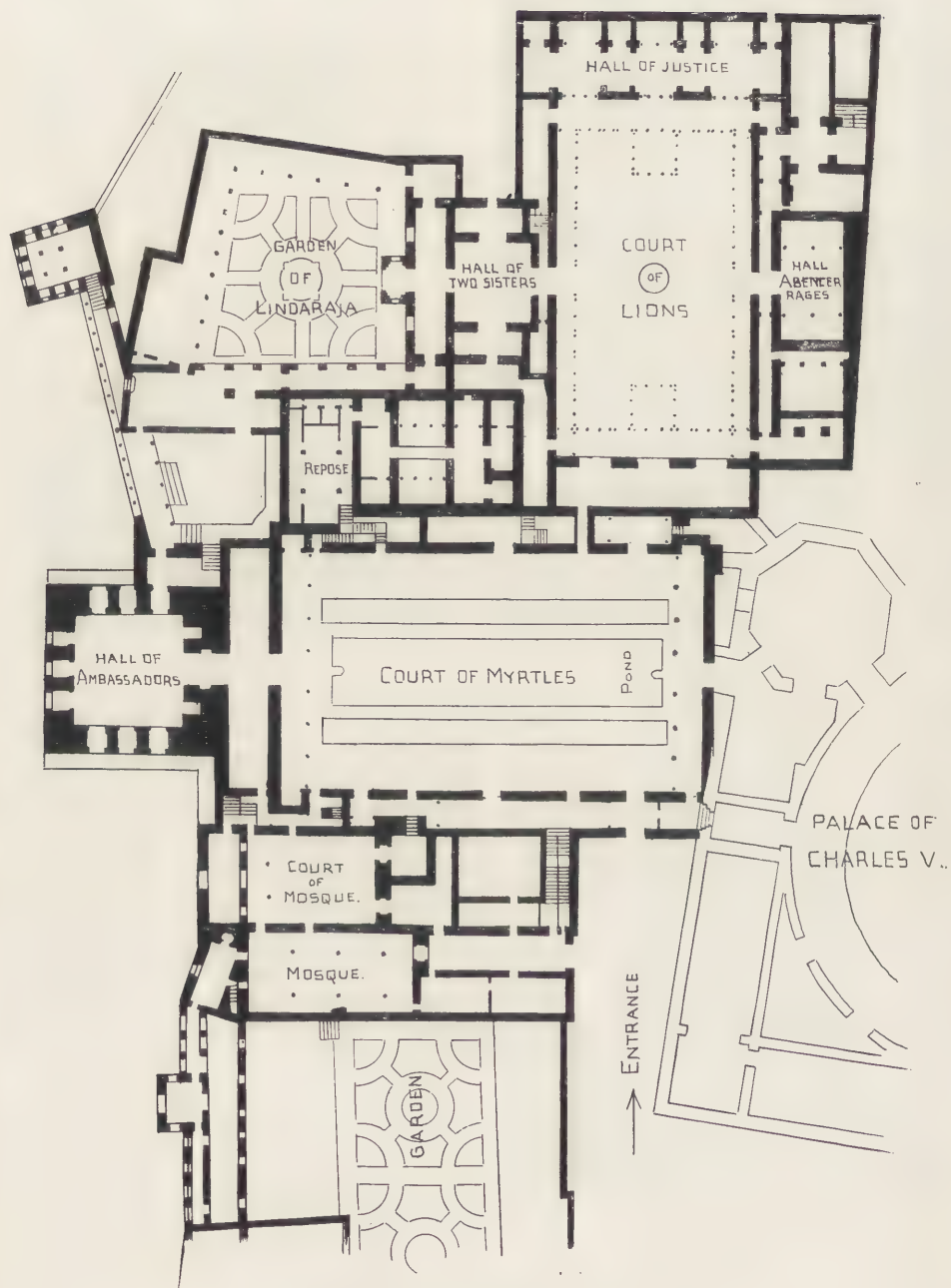
seated, with bare feet, his arms clasped about his knees. The chair is surmounted by little turrets carved with infinite delicacy.

The second chair is carved in the Flemish style of the seventeenth century. As our illustrations speak for itself we will not give a minute description of this chair, nor of the third one, which is of Italian origin and is covered with fawn-colored leather, studded with diamond-headed brass nails. We must not, however, omit to describe a low-backed arm chair which is placed in the third division of the dining-room. The maker of this was undoubtedly inspired by a chair contained in the abbatial church of Saint Denis, and dating from the sixteenth century. The front legs are round and extend balusterwise above the seat, so as to support the two arms terminating in volutes. The hind legs, which are square, form the frame for the back, representing the bust of a man in profile. The man has a skull cap

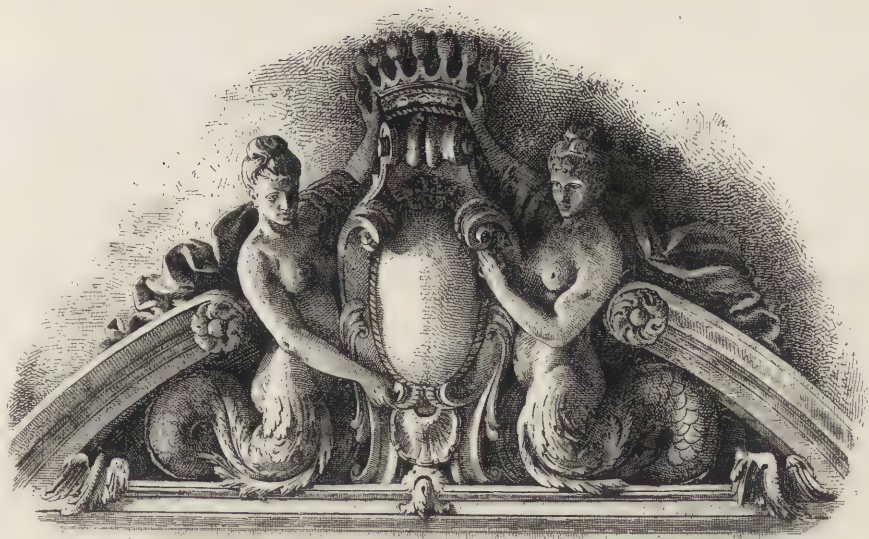
under his hat, which rests on one ear. He also wears a cloak, which is left open at the throat, thus exposing the collarless shirt beneath. Of all the furniture contained in this dining-room the chair just described is the only article built of walnut, everything else being in oak. Oak, with its massive appearance and long fibres, is perhaps less easily carved than other kinds of wood, but it admits of greater firmness of execution and is best adapted for giving the figures a dramatic expression. Consequently there are few first-class dining-rooms whose furniture is not of that wood.

It will have been seen from the foregoing that our dining-rooms can be furnished in very varied styles, but we cannot too fully recognize the powerful inspiration of the French furniture builders of the Middle Ages, whose influence is still felt in undiminished force, not only here, but likewise in neighboring countries.

Fernand Mazade.



PLAN OF THE ALHAMBRA, GRENADA.



ARCHITECTURE IN SPAIN.

No. II.



HE learned mind of Webster has described Architecture as the science of building. Ruskin called it frozen music. I know of no better text than the latter description

for a continuance of our subject, since the first building of which I wish to speak is that most beautiful conception of the Moorish mind—the Alhambra. The earliest memories of childhood's stories, of palaces, princesses, and genii of wealth, all centre around the old ruin nestling under the proud shadow of the palace of Charles V.

For many years the voyager has been obliged to enter Grenada at night, climb the mountain-side in the dark, and sink to rest before getting even a glimpse of the old Moorish fortress palace. He hears the splash of running waters and gurgling brooks, and looking from his window sees the deep green gorge of the hillside he has just ascended, over which the tall elm trees wave their mighty arms and interlace their foliage. They are moving silhouettes, back of which and far away

twinkle the few lights of the distant city. The night bird sings his song, the sweet strains of a guitar greet the ear, and a voice soft as the liquid flow of water sings of the romance of by-gone ages. It rises to joyousness, and sinks to a mournful cadence as it tells of the spirit of Boabdil who haunts the scene of his conquests. Soft odors arise sweet with violets, which dull the senses into delicious repose, and he falls asleep and dreams of Paradise. Upon awaking he finds himself upon the fortress hill of the Alhambra, which is surrounded by a massive wall and wooded vales. The elm and cherry foliage, the wooded valley at the approach, and the bubbling of the waters are no dream, for they are all as beautiful as words can paint them.

In a paper treating on the architecture of the Alhambra, it is difficult to know exactly what to say of it. The terms of architecture seem cruel; the reality is all poetry. To describe coloring by such terms as red, blue and gold seems harsh; the reality is a symphony of color inexpressible, a part of the art itself. Architecture to these Moorish builders did not lead to things of greatness, but to things of beauty.



IN THE GARDENS—THE ALHAMBRA.

Their fabric was not of massive stone and sordid iron, but endeavored to express that which should charm the eye, lead the mind upward away from earthly things, and captivate the very soul. It sang to them of the rewards of purity, the gifts of God, the beauty of life, the surety of victory, and the blessedness of Paradise.

We have before spoken of earlier works of the Moorish eras, but it goes without saying that in the Alhambra we have the finest work of the Moors in Spain, if not in the world. To understand its erection is to understand their life, civil and religious. The rude surroundings of the almost uninterrupted warfare that was kept up necessarily for years between the rival nations, disappeared when the victorious Moor sought the luxury of his palace. The fierce warrior gave place to the cultured chieftain, and its refinement points to the fact that a compari-

son between the Moors and Christians at this period, in this respect, would be woefully disadvantageous to the latter. As to culture, also, Prescott remarks that "the Moors far excelled their enemies in general refinement, and had carried some branches of intellectual culture to a height scarcely surpassed by Europeans in later times." This is assuredly true, and is further shown by the hundreds of schools of art and science which were founded in almost every city which they conquered. From a religious point of view, they were enthusiasts even to fanaticism, and believed the land which they had conquered to have been given to them by Allah himself. Ever since Islam from a religion had merged into a kingdom, its followers were compelled to vindicate its claims to supremacy by means of war against unbelievers. The triumphant victory and consequent surrender of Seville led to the largest part

of the beautiful palace of which we speak, and its architecture will show more beautifully than words can express the quality of character under which it was possible for such a work to be executed.

The principal building of the Alhambra was commenced by Ibn-l ahmar in 1248, and continued by his descendants, but it was between the years 1330 and 1390 that Yusuf I. and Mohammed V. added the most beautiful parts, and caused its graceful colonnades, and its domes and ceilings to glow with a brilliancy of color that in other architecture would have been put down as garish in the extreme.

We enter the huge archway of the Torre de Justicia at which the king dispensed judgment. Over its entrance we read the inscription: "May the Almighty make this gate a protecting bulwark, and write down its erection among the imperishable actions of the just."

The tower itself is one of grandeur, square, massive, simple in effect, and where the cement has fallen from its walls of brick, it leaves a glowing orange impression delightful to the artist. A vaulted passage leads to the interior through a secondary horseshoe arch, which once glowed with the beautiful glazed tiles which covered its face, and of which a small number still remain intact.

Arriving at the top of the hill we pass the uninteresting and half-completed palace of Charles V., and before us, although unmarked by any exterior ornamentation, is the door to the "jewel of Grenada." Open this door and it is like the raising of a curtain before a play. Enter, and though the stage is empty of its actors, the scenes they loved are before you unchanged. A glance at the accompanying plan will show our entrance to have been into the Court of Myrtles, shown in the sketch, which is a *patio* with a colonnade at each end and a pond between two rows of myrtle, interspersed with orange and lemon trees. Enter the beautiful arched entrance in the second sketch, and we go directly into a huge chamber, the Hall of Ambassadors, with immense walls, deep window en-

trances devoid of all glass, and looking down upon one of the most beautiful views of the Darro, and the Vega in the distance. The architecture of this chamber is Moresque in every point, the small columns are of marble and alabaster, and the gossamer perforated arches of a strong cement mixture look like lace fabric. Its ceiling is of wood, a marvel of honeycomb stalactite pendentives so characteristic of the Moorish work. Return now, and turning to the left we shall enter the Court of Lions, one hundred and sixteen feet long by sixty-six feet wide, and containing a colonnade of one hundred and twenty-eight columns of white marble, with beautiful pavilions at each end. In the centre of this *patio* is the much-remarked fountain of alabaster on the backs of twelve lions, the former a beautiful specimen of art, but the latter very questionable specimens of anatomy. Before us, through a network of columns, are the Halls of Justice, to the right the Grand Hall of the Abencerrages, and to the left the beautiful Hall of the Two Sisters, from which one may pass into a small balcony overlooking the Garden of Lindaraja. Pass along a balcony open to this garden, and by various passages we gain the *mezquita* or mosque, and immersing upon another gallery overhanging the cliff of the hillside enter a charming retreat known as the Torre del Mihrab.

Woven into this network of enchantment and in near proximity are bits of tower and garden, court and mosque, bath and boudoir, all full of a beauty which it is vain to endeavor to describe in detail in an article of this character.

The architectural problem was a fortress that should awe the mind of the invader, and at the same time be a palace of luxury which should exclude the heat, and incidentally, as one author remarked, "keep in the women." That the outcome was highly successful is the verdict of both history and art.

The walls will be found lined up with a glazed tile dado, known by the name of *azulejo*, an imperishable and cleanly wall, and yet beautiful withal: The surface above was intended to be, and undoubtedly was, hung with masses of

tapestries and rugs, silks and emblems of triumph, which must have made the effect rich in the extreme. Still above, the ceilings are among the most beautiful examples of wood-inlay in constructional patterns, very honeycombs of wood, marvels of detail, and masterpieces of carpentry; they were called *artesonado*, and were painted and enriched with gold. They are all built upon the principles of mathematics, and show how wonderful is the effect that may be obtained from a repetition of simple lines, just as it is possible to form a grand musical symphony from the fundamental seven notes of the musical scale.

As the Christian religion of the Bible may be said to have been wrought into the idea of Gothic architecture, so the Koran was used as the source of all Arabic decoration.

It prohibited the use of animal life, and left its decorators to seek from its pages a substitute therefor. That they worked out this problem with consummate skill is shown by the general effect of the wall surfaces, and the fact that the scheme aimed at a much more far-reaching effect than the pleasing of the senses, for it spoke to the soul, and to everything that tended to elevate the mind from the earthly to the Heavenly, from the baseness of mankind to the beauty of the Godhead. Thus a more careful examination of the lace-like ornamentation, the entablatures of the columns, the friezes on the wall, and the very ceiling panels, show in Cufic a decoration that constantly spoke to the people in reverential tones of the blessings, the beauty, the goodness, and the greatness of God.

A few of these may be interesting because the Koran has often been compared with the Scriptures in regard to the beauty of its phraseology and its purity of thought. First and throughout all, "*There is no conqueror but God, the glory and the empire belong to God.*" On a fountain, "*If any one approach me complaining of thirst, he will receive cool and limpid water, sweet without admixture.*" On the walls of a Princess' boudoir, "*Praise God! Delicately have the fingers of the artist embroidered my robe, after setting the jewels of my dia-*

dem. People compare me to the throne of a bride; yet I surpass it in this that I can secure the felicity of those who possess me." Or, again, "*Blessed is He who gave the Iman Mohammed a mansion which in beauty exceeds all other mansions.*" On an elaborate bowl, "*Look at this solid mass of pearl glistening all around, and spreading through the air its show of prismatic bubbles which fall within a circle of silvery froth and flow amidst other jewels, surpassing everything in beauty, nay, exceeding the marble itself in whiteness and transparency. Seest thou not how the water from above flows on the surface notwithstanding the current underneath strives to oppose its progress. Like a lover whose eyelids are pregnant with tears, and who suppresses them for fear of an informer. May the blessing of God forever be with thee! May he make thy subjects obedient to thy rule and grant thee victory over thy enemies!*"

So one might go on for pages were it not that other works of interest await our consideration. Do not, however, leave the place without a bit of a day-dream. Sink down for a moment in the Lion Court, near the entrance to the Hall of the Two Sisters, and let your mind drink in a full understanding of the beauties of the place, the refinement of the architecture, and the real softness of an expected crude decoration. The sun arises over the Vega, and while its hot rays fall upon parched ground, the cool nooks and colonnades of this palace offer a retreat from its heat, and the grateful flow of purling watercourses dull your senses. Add still to this in your mind's eye the luxurious life of the old chieftains, the soft bewitching enchantments of black eye and voluptuous form, and you will understand better the florid descriptions of the Arabic writers, which reveal the truth of the opulence and the luxury of its builder. "Truly, the turrets of curiously wrought larch or marble vie with cornices of shining metal that glittered like stars through the dark foliage of the orange groves; the whole is like an enameled vase, sparkling with hyacinths and emeralds."

The power of example is strong, especially if the result of that action

is satisfactory. We see, therefore, in the neighboring city of Seville a building which emulating the architecture of the Alhambra sought to be like it. Don Pedro the Cruel, in 1364 used all his energy to eclipse that beautiful work, and employed Moorish workmen to execute the work. Indeed, so sure was he that he had done so, that he put to death the workmen, lest they should live to do more work as beautiful. Isabel the Catholic erected the chapel with ornamentation of *azulejo*, and Philip V. at a later date added the beautiful columnated Apeadero. The copy is never as satisfactory as the original, however. The art of the Moor reached its zenith with the Alhambra, and was never again equaled, while the Alcazar is of secondary importance.

We must turn now from the work of the Moors and examine a few of the grand erections of the Christians, those cathedrals for which Spain is noted, and which tell of the influence of a Christian art which gradually arose and turned back the Moorish influence which was spreading through Spain, but was becoming at the same time more and more debased.

It will be sufficient if we take the four or five examples of Gothic work so well known, and to which the mind at once reverts when we think of the cathedrals of Spain. So eminent an authority as Professor Moore lays claim to the belief that the true Gothic style in all its purity can be found only in France, and after reading and pondering his admirable work on this subject one is likely to agree with him. Certainly the student of Gothic architecture will point all his study toward France, and having studied it thoroughly will be disappointed in the Gothic art of Spain. But, at the same time, this very fact adds much to the interest of Spanish study, since he will find his point proved, and will observe that many parts of the most notable works in Spain are due to the grandly conceived, nobly constructed, and wonderfully executed work of French designers.

It has been said that the architecture of the world which has longest

withstood the effect of the ages is of an ecclesiastical character; the Egyptian temples of the Nile, and the grand old remains upon the Acropolis at Athens attest the truth of this statement. And it is no less true that it was the enthusiasm of a religious faith coupled with a desire to free the spirit from monastic oppression that led to the erection of those grand structures, which have stood for ages as the outcome of this popular enthusiasm. Religious fervor, stimulated by the legends of the Church became the very web and woof of the fabric, and it is possibly not strange that the artists working under such inspiration should erect towers and spires in such a way that the most ignorant of the people could read their meaning as from an open book. That they should erect them, however, with such a full understanding of both construction and detail is not a little surprising.

To the general student of architecture there are two or three points which attract attention in any edifice. His first ideas, of course, will be formed from the exterior view. He will contrast it with other works of a like character in other countries, and will be able to work out the probable stages of construction. He will enter, and while all cathedrals will have much in common, he will nevertheless be struck by some peculiarity in each one.

The main difference in Spanish cathedral planning comes from the change of the choir from the east end of the church to west of the crossing, and inclosing it by high walls most elaborate in design. This difference is almost universal. The choir is called in the Spanish nomenclature the *coro*, and the position of the high altar being left in the apse is called the *Capilla mayor*. Now it is obvious that since the ritual of service is about equally important in the choir and at the altar, there is made necessary a connecting aisle between the two, and since the lantern or *cimborio* comes between them and at the cross, the service takes a central position, where in other churches it is in the extreme east end. The people, therefore, are in the



10 20 30 40 50 60 Metros.

PLAN OF THE CATHEDRAL, BURGOS.

transepts and middle side aisles, and the clergy pass to and fro before them. In this respect there is certainly a gain in the effect of the service. We shall note the disadvantage on entering.

The first impression of Burgos cathedral is its picturesqueness. Its west front pierces the sky with two open-work stone spires, and its centre bristles with a magnificent *cimborio*, one hundred and eighty feet high, and flanked by eight turreted spires. The whole is surrounded by groups of buildings which entirely obstruct our view in whole, and leaves us to walk around, climb flights of stone steps, and wonder at the caprice of the founders who chose a side hill for their structure. After making the circuit of the church we arrive again at the south entrance, and entering a gateway between the high walls of the Archbishop's palace and the cloisters, climb a score of steps and stand before the magnificent southern transept, with its rose window of geometrical tracery and open screen above, a peculiarly happy inspiration in design. We enter, and the first impression of a Spanish cathedral is before our eyes. Directly before us away over in the northern transept is a double flight of stairs gorgeously decorated in the style of the Renaissance, and the design of Diego de Siloe. How the level thirty feet above the pavement was ever attained in the old church is not apparent, but from the style of work we knew these old transepts were the work of the thirteenth century builders, and there are no remains of an older staircase. To the right is the *Capilla mayor*, and to the left the slender grouped shafts of the nave spring into the air and carry the groined roof 195 feet high. We look up and are aware at once that the *cimborio* is of still another era. Four immense columns, covered with raised decorations, ponderously ascend, and throwing out their ornamented ribs like the shoots of a palm tree, form a sort of a quadruple pendentive, picturesque and impressive in the extreme, but full of a mixture of Pagan, Gothic and Renaissance detail. To the west is the *coro*, the destructive feature of the Spanish cathedral, the choir of the

French and English designers, the Mihrab of the Moslem. But how curious its idea and how absurd seems its conception! It is obviously far from satisfactory to enter a nave 300 feet long, the light of whose clerestory shimmers down upon a dozen columns of beautiful design, and be at once confronted by a huge blank wall or a high metal railing, be it ever so beautiful. But this is just what occurs in most Spanish cathedrals, and since neither the Mozarabic nor Spanish liturgies contain any data for such a practice, it is evident that it was the outcome of some innovations of the fifteenth and sixteenth centuries.

Walk now around the aisles, and we shall pass a large number of chapels of later date, many of them with beautiful examples of vaulting, the inner walls of which are flanked by the columns outside the aisle, and the outer walls receiving the thrusts from exterior flying buttresses of the main roof.

Across all these chapels are wonderful examples of the metal screens or *rejas* for which all Spanish churches are famous. Indeed, it is but fair to say that in no country in Europe are such designs and executions of metal-work seen as in Spain; they form a study of themselves worthy the thought of all artists or architects.

To the east of the Capilla Mayor is a chapel that claims attention because again we meet another era of work. It is the chapel of Fernandez de Velasco, erected in 1487 by Juan de Colonia, who also designed the western spires. The chapel is octagonal on one side and square on the other, and the whole is brought to a true octagon by use of pendentives and ceiling ribs, Gothic in spirit but certainly not so in detail. The beauty of the design, however, is seen in the elaborate traceries between these groining ribs, which gives to the whole an effect of lace-like elegance constantly aimed at by the Spanish workers of that day. It is impossible, of course, to say how much influence was due to the national draughtsmen who must have worked under this German architect, but at any rate the credit of its design and



VIEW OF THE TOWER OF THE CATHEDRAL, BURGOS.



WEST FRONT OF THE CATHEDRAL, BURGOS.



TRANSEPT OF THE CATHEDRAL, BURGOS.

execution must be awarded to him who carried it out.

It would be unfair not to mention the cloisters, those beautiful adjuncts to ecclesiastic structures in all countries, those monastic retreats which seem to be full of repose and quiet, nooks open to the air of Heaven and yet guarded from the scorching rays of the sun. One never can enter them without a feeling of restfulness.

In Burgos they are in two heights, the upper story much ornamented and of fourteenth-century design, the openings having four lights and inclosing quatre-foiled circles within the outer arch. The sturdy buttresses between the divisions are capped with picturesque crocketed spires, and groups of saints stand on corbels under canopies, as if to guard the home whose aisles once rang to their footsteps. One almost feels like throwing off the cares of the world, the flesh and the devil, and enjoying the solitude and quiet which they offer. Such thoughts are not of long duration, however, for as the eye mounts upward toward the blue sky above the quaint pinnacles of the old sacristy stand out against the sky. These different points of view bring out the singular conformation of this old cathedral as to eras of work. We note that while the old skeleton underlying the church is formed of a simple old thirteenth-century church, the apsidal chapels and cloisters are distinctively of the fourteenth century. Later additions of the numerous chapels were made at a later date in the fifteenth century, and the noble lantern, which, I believe, was the last piece of work, fittingly carried the work into the sixteenth century era.

Before leaving, look again at the west front with its coarsely designed spires, built in the fifteenth century by the same Juan de Colonia, of whom I have spoken. Observe the whole façade, and before the eye gets to the spires think for a moment of old Notre Dame at Paris with its exquisite proportions, its grand entrances, and its horizontal lines of arcaded tracery; one will then appreciate at once the difference which marks the step from France to Spain. Let the eye then

wander aloft and the two spires which in the distance inspired one writer to speak of them as "spires of the most delicate open stone-work which looks so fragile that one wonders it has not been blown away," look as coarse as they could well be made, and are terminated by a balconied finial as inappropriate as it is ugly. I have spoken more at length of Burgos, not because it is to be considered foremost among the cathedrals of Spain, but because its general type is most like the type of French Gothic churches of the thirteenth century, as exemplified by those wonderful erections at Paris, Chartres, Rheims and Amiens, examples which impress one with their wonderful variety and daring constructive elegance as no other country in the world impresses one. In them it is impossible not to enter in some degree into the poetic and religious feeling that is expressed in every feature of their composition. Their designers were giants!

As we go south in Spain the character of the general design of the cathedrals changes, the proportions of the width increase, while the length diminishes, and there is no effort to obtain for an exterior view the simplicity of the old forms. The detail also departs from the purity of the Gothic forms, and there comes a mixture of Gothic and Renaissance composed of a rich luxuriance of pinnacles, shells, heraldic devices and cupids *à galore*.

In order to show a little of the methods which were employed in obtaining designs at this time, and to show the relations of architect, client, and builder, it is interesting to read the documents that are on record in relation to some of these works. It will be best to select the two examples in Central Spain built in all probability under the same architect, and of nearly the same plan. I refer to Segovia and Salamanca, and which are interesting as having been built about 1525, when the purity of the Gothic was on the decline, indeed had almost passed away.

First of all, by Royal Order of Ferdinand the Catholic, Alfonso Rodriguez was required to proceed to Salamanca, choose the site and make a



EAST FRONT OF THE CATHEDRAL, SEGOVIA.

sketch plan for the cathedral. Alfonso evidently being very busy with other work neglected this order until brought to task by the Queen Dona Juana, who, repeating the same order, demanded that he go to Salamanca without making any excuses or delay. A gentle reminder at the end of the order also added, "and thou mayest not fail in this, under pain of my displeasure and payment of 50,000 maravedis for my treasury." This picture of an architect being reluctant to take hold of so grand a piece of work is at least contrary to all modern professional custom. Eight other architects also received the same order, and Anton Egas was among this number, for his maids Maria and Catalina indorsed the writ, which was served on them in the master's absence. Thus enjoined these nine architects met, laid out the scheme for the cathedral at Salamanca, made their plans and sketches, and on Sept. 3, 1512, Juan Gil de Hontanon was appointed architect, or as he was then

called Maestro principal, at a salary of 40,000 maravedis a year. His design was a good example of florid Gothic, but of no particular importance except from the fact of his having had sufficient good sense to spare the glorious old cathedral which we have before described.

In a later work reciting the construction of Segovia are several interesting items which go to show the thorough manner in which the work of these old masters was done, and further, the fact that the plans were often changed after the work was partly done. We find in the records of the cathedral the following remarks: "Item: The principal pillars, for fear there should be any misfortune or bursting in the stone, were all compacted throughout their body with single shaped stones, in pieces of the same thickness as those which are in the face of the work." And again, "and in said buildings it was impossible to foresee at the first

every necessary thing, because time and the work itself showed many things which at first were not known; and so, beginning to feel the cloister would be too low, by agreement with the said John Campero (the builder) they gave him 400 ducats in order to raise it a yard, which gave him grace enough."

These little lights on the life and experience of these old masters are intensely interesting to me, as they show that human nature and the limitations of knowledge were much the same then as now.

As I was studying the plans of the noble French cathedrals in comparison with the Spanish ones, a marked difference was observable in two points.

If we take for instance the nave of Amiens we shall find the general plan almost identical in both Segovia and Salamanca, in which the nave chapels are inclosed by buttress walls on the inside and without heavy exterior buttresses to hold the thrusts of the ceiling. But note the result of climatic influence. France, with its lack of scorching sun, admitted the highest flights of fancy in the open work of its piers and abutting walls. Floods of light stream in from all points. Lofty mullioned clerestories and complicated window tracery filled with marvels of glazier's skill give an architectural beauty which to the Spanish architect seemed totally impossible, and the result to the mind is obvious. Take our present church of Segovia for example. We have a nave with side aisles and chapels, transepts formed by breaking across the clerestory, and a glorious apse with chapels low in effect but forming a mass of picturesqueness that is not excelled in Spain. But note the difference of wall surface and opening. Heavy walls rise from a stepped base, and flanked by three stages of roofs with their buttresses are capped each with crocketed pinnacles. Sunlight must be barred instead of invited, and thus the transepts instead of casting an abundance of light from a glorious tier of glass runs up square and stern with small window, and capped only by its open balustrade and flanking buttress tops. The central lantern also with but four small

windows admits no light effects, but rises square and severe. The spirit of the whole is different, the poetic effect is lost, and gives place instead to a grandeur of massiveness, which, rising in a pyramidal mass from the hillside forms one of the most interesting objects in Segovia.

There are two more ecclesiastical structures which at present claim our attention. They are the cathedral at Toledo and the mosque-like cathedral at Seville, both amongst the largest in the world, and the former most surely claiming the honor of being the finest specimen of thirteenth century Gothic in Spain. If I were not writing now particularly from an architectural standpoint I should stop to sing the praises of the old City of Toledo itself, whose history among the most important cities of Spain is great alike in peace and war. Here was established those families whose names are emblazoned in numerous devices on portal and tomb, on tower and wall. Fonseca and Mendoza, who founded colleges and seminaries; Tenorio, the engineer, whose skill is seen in works of great magnitude; Rodrigo, the general, whose feats of valor have been told in romance and history—all go to make up a *corps d'honneur* such as few cities can boast. Such lists, and the deeds which they accomplished, seem to show us somewhat of the temper of the people of those old days, when the architectural wonders of which we speak were built. One is apt to ask himself how it was that these people were enabled to erect monuments which to-day are seldom attempted, and when attempted are almost without exception failures. It is true that in almost all countries many of the most renowned of the monastic establishments were evolved from the heads of monks, who established schools of architecture and sculpture, and taught their inmates the principles of form which their needs demanded. But this only meets the question from a general point of view and leaves the most important part, the grandeur of composition and the wealth of detail to be accounted for. And when we consider that that body of men known in Spain



THE CATHEDRAL, SEVILLE.

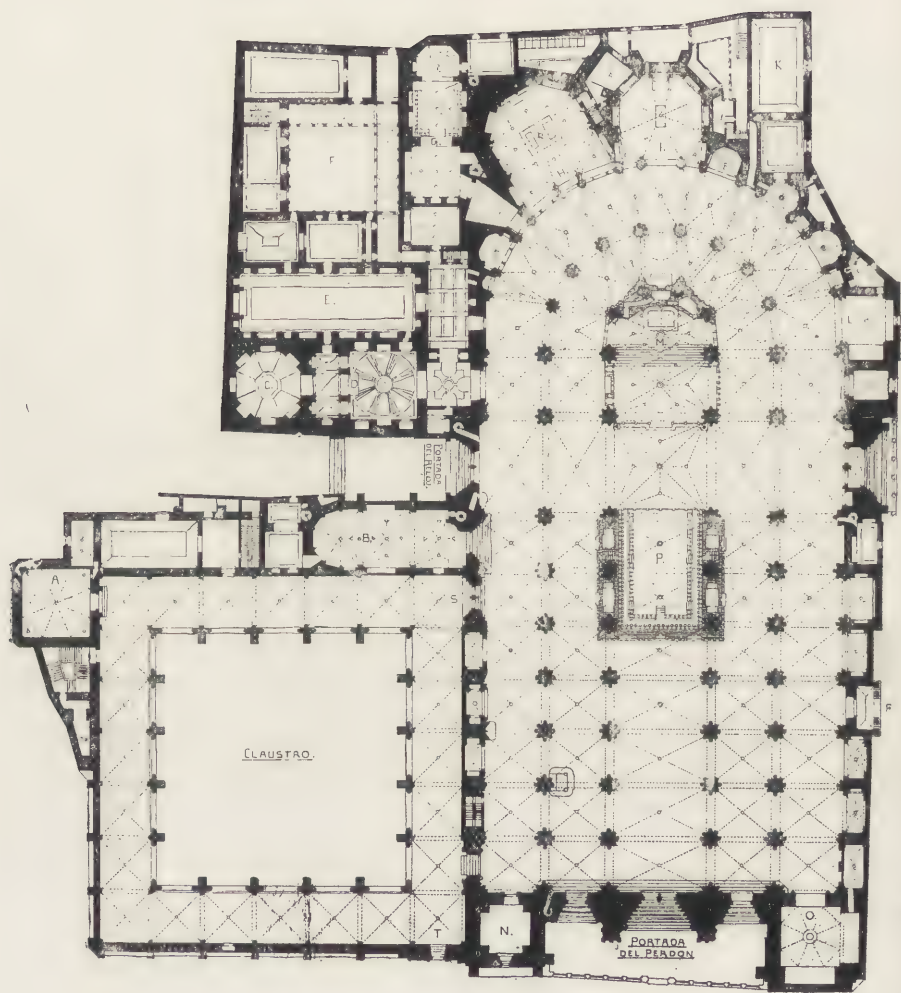
as the Junta of Architects were often among the class that we call builders, it is the more remarkable. That they must have been most highly educated and thorough masters of the style in which they worked is most evident. Further than this, of course, the question of small cost of labor, support of government, and the wealth that began to flow into the country from the new worlds, had its influence as regards the extent of the works.

The front view of the cathedral of Toledo does not impress one with its great worth. It is only when one has seen it in all its parts, studied its glorious interior, its vigorous detail, its accompaniment of furniture and fittings, that one admits that it has few equals as an ecclesiastical structure. The architectural mind constantly reverts to the glorious group of French cathedrals at Chartres, Rhiems, Amiens, Rouen and Paris, for it seems to have little of Spanish influence, and its detail is thoroughly French. And sure

enough there is reason for this feeling, since the epitaph of its designer, written in Latin, gives him the right to be called Petrus Petri, which the Spaniards change into Pedro Percy, and which the French historians have with no less right and much more probability worked into a French name. At any rate, the spot where the cathedral stands once held a structure dedicated to the Virgin, which was seized and consecrated to Mohammed by the Moors, pulled down by Ferdinand and rebuilt by him under a man who was known as Petrus Petri, who designed and started the church about 1250, and who died in 1290. And although it is in general his original design that was carried out as to interior, it is stated that no less than one hundred and fifty-nine artists during the successive centuries helped to enrich the temple by their knowledge and handiwork. Of the exterior I shall not speak; an abomination of huts and hovels surround it, and in design it has been so cut up and added



THE CATHEDRAL, TOLEDO.



PLAN OF THE CATHEDRAL, TOLEDO.

to that it will not bear out the high praise that the interior warrants. The square tower, however, is monumental in the extreme. Looked at through a glass darkly, so to speak, its square mass and pinnacled octagonal upper story is pleasing, while the strong simple buttresses over the west entrance together with the vast pointed entrance itself is certainly impressive. But it is only when we enter the quiet Gothic cloisters, fragrant with flowers and warm with sunlight, and then step down through the Puerta de la Presentacion into the church, that the grandeur and beauty of the edifice strikes us. It takes one's breath away for a moment, and we are awed by its beauty. Here are five naves and eighty-four huge shafts. The mysterious light tempered into an opalescent shroud stretches away four hundred and four feet, and rounds itself into the double aisles of the apse. And still in the distance, through the gorgeously decorated Capella Mayor, vistas of chapels are seen supported by grouped piers, light and graceful. To be sure the *coro*, that *bete noir* of the Spanish cathedral, strikes one full in the face, still the eye wanders over its pinnacles and looks across the space of two hundred and four feet in width. As to this immensity of effect I think Seville impresses one still more, but the impression does not seem to be so satisfactory. Indeed, I remember the feeling that if a great central lantern could have soared Heavenward over the cross at Toledo, the effect of this cathedral would have been the most stupendously grand and impressive in existence. The plan of Toledo explains itself, but like Seville gives an impression of a more mosque-like structure. This illusion is only in plan, however, for since there are no side chapels of importance, and since the general aim has reduced itself to simplicity of plan and purity of detail, the result is most satisfactory.

Since so many artists used their skill in adding to its beauty, it necessarily follows that there were slight changes in the style, and this is of course true. The screens around the magnificent *coro*, several of the doorways, and the

glorious chapel of San Ildefonso were of the fourteenth century, and have been designated as the middle pointed style of architecture, and again in the fifteenth century the cloisters and the chapel of San Blas were added. That the former must have been a most beautiful example of that period is certain, although very little of the tracery now remains.

I cannot leave without speaking of the little Nino Perdido entrance, the beautiful gate "of the lost child." Look back and you will see a little cupid who tugs at your heartstrings, and has ingratiated himself into the good favor of every artist who uses a sketch-book. As a delicious little bit of the plateresque style of Spanish art it is unrivaled.

The vast ecclesiastical structures of Spain would be incomplete without a passing notice of Seville, that pot-pourri of styles which, nevertheless, next to the Giralda tower, of which I have spoken, is the crowning glory of the city. It stands in a square, surrounded by columns, the relics of former mosques, and gives one an impression of a vast frosted fruit cake, well carrying out the expressed intentions of its builders "to build a structure of such size and beauty that coming ages should proclaim them mad for having undertaken it." You will observe that we have arrived far enough south again to bring us into contact with distinct Moorish influence. In fact this vast cathedral impresses one more like a mosque than a Christian church, and the feeling is strongly felt upon entering and knowing that its width exceeds all other European churches, being 271 feet wide by 414 feet long. Its plan is far from beautiful, but its effect is certainly grand and solemn in the extreme. The original building was a mosque, built in 1172, and later used as a Christian church until 1401, then pulled down and the present one started. The style of the interior is a rather debased Gothic, but the columns, with their engaged shafts, uphold a central nave feet 150 high with a lantern 171 feet high. It is this extreme height that gives to the interior its astounding effect, but again, as in

all the large cathedrals, the huge mass of the *coro* rises like a nightmare before the eyes and blocks out the view of its glories. It is a noticeable fact that the shafts of the *cimborio* are of no greater size than the nave and aisle shafts, and it is undoubtedly from this defect, together with constructional weakness of the cross thrust supports, that the lantern fell a few years ago.

While one cannot say much in praise of the architecture of Seville, the old glass which casts its halo of light through the windows is magnificent. The Spaniards say that no ray of light has power to injure within the bounds of the voice of prayer. They have thus left the glass uncovered, and it is the crowning glory of the church. Although the outer aisles have no flying buttresses, like Salamanca, the chapels are formed by heavy division walls, and it is in them that we find a perfect museum of sculpture and painting. No one can forget that this church is the home of Murillo, dear to every Sevillian. His Saint Antonio brings an expression of pity to the eye, and it is said that before the Angel de la Guarda there used to sit an old woman, who, having lost all her children, came daily for years to watch these angels who in their Heavenly light brought back to her the very presence of

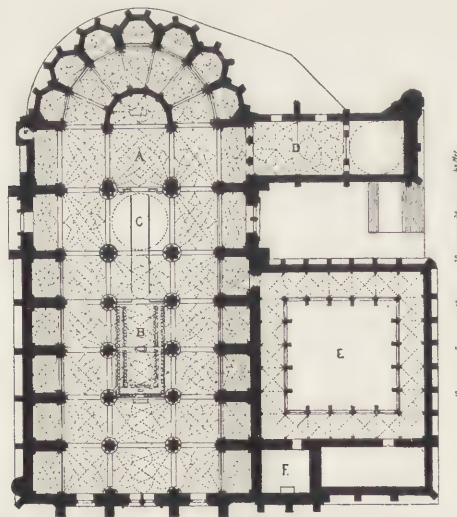
those she had lost. Pass on, and you will enter the sacristy with the glorious Deposition of the Cross by Pedro de Campana. One pauses and waits, the work of love of these men is an actuality, and he gazes with an abstraction which it is hard to dissipate. One can pass hours in examining the chapels, the *coro* with its stalls of Moorish influence, the Gothic Retablo of 44 compartments and of several eras of art; but since the church is not of a high order of art, we shall pass on to a final consideration of interesting architectural structures other than churches.

I have taken the liberty of simply adding the plan of Leon Cathedral, because a comparison of the Spanish cathedral plans is interesting, and because its vast entrance reminds one somewhat of Rheims, and seems unmistakably to suggest French character if not indeed French origin. "Springing into air like a vast conservatory, its delicate gossamer proportions seem as if the winds might blow it away."

Meanwhile do not forget to tarry a little in the old town itself. One can hardly afford to have come so far and see only its architectural treasures, for the old Spanish couplet is full of truth:

"Quien no ha visto Sevilla,
No ha vista maravilla."

Charles A. Rich.

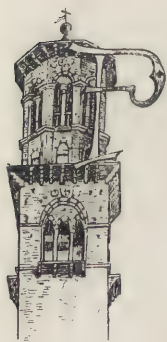


SEGOVIA.



THE MAIN VESTIBULE.

THE ROYAL POLYTECHNIKUM AT BERLIN AND STUDENT LIFE IN GERMANY.



POLYTECHNIKUM or Technische Hochschule is the name given by Germany and Austria to those colleges which embrace the studies of architecture—civil and naval; engineering—civil, mechanical and electrical; and mining and chemistry.

The Berlin Polytechnikum takes the highest rank, next to that in Vienna, the teaching of architecture only considered. In engineering and chemistry, the world on this side of the ocean concede to it the highest place and, at the present day, both Vienna and Berlin can well array its architectural scholastic talent against that of the more celebrated institutions at Florence and Paris. It is a great mistake that many American architectural students are committing—going to Paris with a very

limited stock of French at their command. They can get only a slight training in the ateliers, and the lectures in French, of course, are of little or no use to them. But perhaps it is of some account in America to honestly say that one has been to Paris. However, those many Americans born of German parents, who are familiar with the German tongue, why should they not prefer a thorough education in a language they understand to a course in French, beset with linguistic difficulties. The question of the fashionable ought at least to be eliminated from an education in art.

The title "Royal Polytechnikum" has existed only since 1879. It is the successor of the two institutions that formerly existed under the names "Bauakademie" (Academy of Building), and "Gewerbe Akademie" (Academy of Technology).

The former was founded in 1790 and was, with the exception of the École Polytechnique at Paris—founded in



THE CENTRAL PART OF THE MAIN FAÇADE.

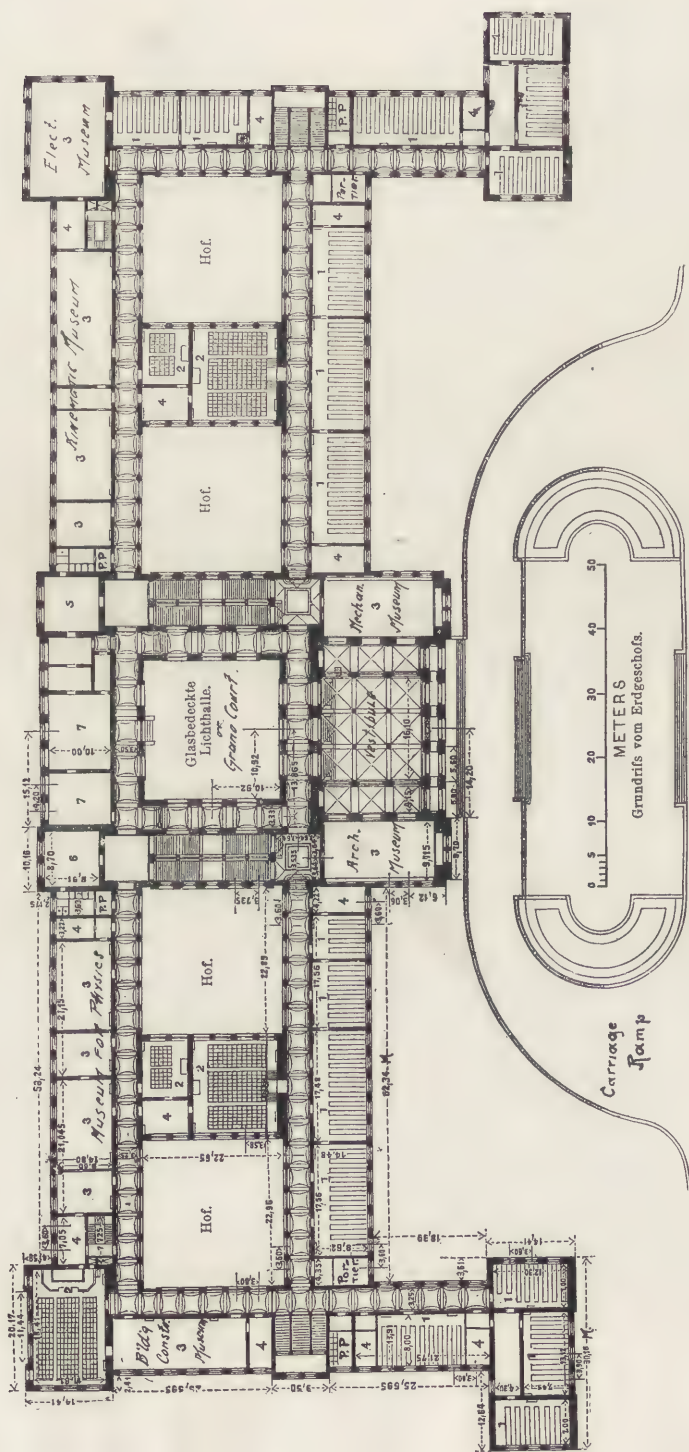


THE LABORATORY.

1794—the first institution of its kind in Europe. However, since 1699, there had been a department in the Academy of Art devoted to the teaching of architecture. The "*Gewerbe Akademie*" was founded by the great Beuth, in the year 1821. Both institutions flourished, although both suffered from lack of sufficient accommodations. After the close of the great war of 1870-71, all German commerce and industry received such an immense stimulus that the accommodations became entirely inadequate for the number of students applying for admission. So, in 1879, the Prussian government decided to consolidate the two academies into the "*Königliche Technische Hochschule*" or "*Polytechnikum*," and 9,000,000 marks or \$2,150,000 were appropriated for a main building to accommodate 2,000 students; for a laboratory, with accommodations for 165 students; and for two minor buildings—all in a beautiful park, with fountains, woods and gardens, built upon a plot of ground of 1,900 acres, known as the Hippodrom, in Charlottenburg, a town adjoining Berlin.

The plot has the form of an irregular triangle. Its longest side borders on the Berliner Strasse, the most beautiful street, or "allee" as wooded avenues are named here, in Germany, not excepting the celebrated "Unter den Linden" of which it is a direct continuation. It is separated from the latter by that noble triumphal arch "Brandenburgh Thor," with its large quadriga that Napoleon the Great stole from it for Paris, and Blucher brought back two years later.

The designers of the school building have set the structure well back from the promenade, but connected it with the same by means of a long imposing carriage ramp, half encircling a terrace rising 3 feet from the promenade, 265 feet wide by 84 feet deep, the semi-circular ends of which are grown with shrubbery and trees trimmed to different symmetrical heights up to about 30 feet. The terrace connects, by a set of five steps from the sidewalk, with another of nine to the top of the ramp, both 78 feet wide. From the ramp another five steps, these 95 feet wide, lead to the level of the main vestibule,



PLAN OF FIRST STORY OF THE MAIN BUILDING.



GATES—MAIN ENTRANCE.

which is yet 3 feet lower than the floor of the grand court, from which four steps at different points lead to the corridors of the first story. The addition of sidewalks running up on each side of the carriage ramp complete a very easy mode of access to the main floor.

One can see by examining the fine detailing of the façades that the architects reckoned only on the view from the immediate promenade. As shown in the plan its masses are broken decidedly and often to meet the same requirements.

The observer in front of the building will hardly perceive the actual size of the structure, much less that of the various parts. The "mittel-ban," or central portion, springs forward 45 feet and is 170 feet wide, the end wings reach out 108 feet with a front of 100 feet, divided horizontally into three parts.

Before proceeding with the description the name of the designer should be given. August Hitzig succeeded Lucae, the originally selected architect of all the buildings, upon the latter's death.

He saw fit to entirely alter his predecessor's plans and design. Hitzig did not live to see the completion of the work; it was, however, carried out according to his ideas by the greatest German architect of to-day, Prof. Julius Raschdorff, who, though seventy-two years of age, is still giving lectures and guiding pupils in the draughting-rooms. On account of the many large equally divided windows with their narrow, dividing piers, Hitzig's design has been the subject of some criticism; it has been derisively named by some the "Fensterburg" or "window-burg," but such was to be expected from that impractical class of architects which is now happily becoming extinct on German soil.

The bold basement in wide-margined deep-bevel, flat rock-finish ashlar of warm red sandstone, is supported by an axe-finished plinth 2 feet 6 inches high. The basement, but not the plinth, is battered slightly. The first story is of richly-profiled bush-hammered ashlar in old Warthauer yellow sandstone, cut into square panels under the window sill. The arching at the

central portion is distinguished only by strong carved keystones. At the second story, excepting the fronts of the wings and central structure, a plain pilaster and circular arch construction leaving 10 feet openings is adopted throughout, reaching up to the 14 inch ribbon-twined laurel leaf band under the third story window sill. The keystones of the arches are stern, angular, having an acanthus leaf laying flat in a deep panel. The whole story is of light yellowish gray sandstone inclusive of the moulding encircling those ingenious polished granite rosettes or tablets which decorate the unpaneled spandrels. These rosettes of many varying colors are very effective illuminators of the otherwise monotonous arcading, a bold idea of the designer, and I wish to lay stress upon the fact that they are not placed symmetrically as regards color. Such an arrangement would probably look vulgar, but this non-matching disposition of them makes a beautiful effect, and I do not comprehend why the legitimacy of the motive has been questioned by some. To give an idea of the assortment of colors used, those on part of a wing are as follows: grayish yellow, very light gray, red, very dark gray and again red.

The third story window sill and the carved band underneath are of white sandstone, above it the arcading of the third story is subdivided, having pilasters over those of the second story, but between these Ionic columns with red sandstone shafts. Excepting the latter the material of the entire story up to the white sandstone entablature is again the yellowish gray sandstone. Alternately the plain spandrels are again set with colored granite rosettes, that is, only over the pilasters, not over the colored shafts.

In the central division of the front façade the windows in the receding central vertical division are kept in the same character, but greatly enriched by doubling the pier pilasters and giving them pedestals connected by balustrades, and by the substitution of intricate carving in the spandrels. On each side are highly decorated niches containing heroic size statues—on one wing those of Erwin von Steinbach,

the designer of the Cologne Cathedral, and Bramante; on the other wing, as representative engineers, queer! both foreigners—James Watt and Stephenson. Beneath and above the niches are large richly-carved panels, containing coats-of-arms and insignia, while on pedestals of the crowning balustrade are allegorical groups representing sciences.

Our illustration (p. 66) shows this central part of the main façade. A detailed description is not necessary, though, perhaps, one should state that the busts on the balustrade represent Aula of Gauss, Eytelwein, Schinkel, Redtenbacher and Liebig, and the heroic size statues in the niches, on the left the German Michael Angelo, Andreas Schlueter—honored by his country in his death after it had caused him to die of a broken heart in St. Petersburg, because he was unfortunate enough to build an unstable tower to the Royal Palace in Berlin—on the right the statue of Leonardi da Vinci. All the statues and busts are in sandstone. How many pretty façades have been spoilt by dazzling white marble figures!

It is a great misfortune that this most magnificent building of Berlin is not situated more in the heart of the city to be oftener admired by visitors. It is spoken of in all guide books and is always, with its numerous museums, open to visitors, yet seldom do I meet any here.

After inspecting the exterior of the building one enters the vestibule, 53 feet square. This is cross-vaulted with rich, heavy stucco decorations, colored dark brown, and the vaulting is supported by polished black granite columns with bronze bases and caps. Facing the entering visitor at the opposite end sit two sphynxes, on marble ramps of the steps leading to the "lichthof" or court. In the vestibule are two 6 feet models of part of the Kaiser Wilhelm monument, submitted and honored with first and second prizes in the celebrated competition. (It may be added for the benefit of some German architects in New York that queer manipulations in connection with architectural and art com-



THE GRAND COURT.

petitions are also apt to occur here; *f. i.* Sculptor Karl Begas, to whom the present Kaiser committed the execution of this costly monument received no prize in the competition, and Julius Raschdorff was awarded only the fourth prize in the competition for the five-million-dollar Berlin cathedral, the building of which, however, was nevertheless awarded to him by the late Emperor Frederick.) Separated from the vestibule by a glass wall are, on one

gallery 12 feet wide. The latter is cross-vaulted from the columns to pilasters of granite. The ceiling is of stained glass. Polished red pilasters, trimming the piers on the ground floor have black granite bases and the carpet-like decoration has a dull olive green ground with patterns in faint yellow, red, dark green, light brown and gray. All architraves, cornices and balustrades are of light blue gray. The piers and



STATUE OF KING FREDERICK WILLIAM IV. IN GARB OF ROMAN EMPEROR.

side, the collection of plaster models of celebrated sculpture work; on the opposite, a great collection of machinery models.

The most imposing feature of the interior of the polytechnikum is the grand court. It is one of the most beautiful courts existing to-day.

The arcade consists of ninety-six polished red Swedish columns with light bronze bases and caps. The strong piers on the ground floor are enriched with dark green carpet-like decoration. The court is 72 feet square, surrounded by a

sandrils of the second story as well as the piers of the third-story are faint violet gray. The horizontal bands are of faded yellow on brown. The medallions are light gold with the heads in gray, while the rich design over the top architrave is in yellow and blue. There are also coats-of-arms containing various bright colors.

The marbles composing the floor are pink, light and dark gray and black.

Very much is added to the general effect by the view on two sides of the main staircases. These are sup-

ported by dark gray polished granite columns with Carrara marble caps. The richly-moulded strings are of polished grey granite. The pink granite steps have been ingeniously treated.

The walls of the four other 72-foot courts are of leather colored brick, with sandstone trimmings loaded with studies in sgraffito executed in light gray on dark brown.

Now this building was erected to accommodate two thousand, yet there are to-day twenty-four hundred students on the register. What is done with the surplus four hundred, or

year has been particularly hard, spent in preparation for a terribly trying final examination, known as the "Abi-tourien." After these thirteen years of the strictest of school-boy life, veritable moral captivity, he enters a college generally very far from home (he seldom chooses that in his own city), and can there do as he likes, work or shirk. No one cares whether he attends a lecture or not. All depends upon himself. The professors take no notice of his conduct, even sign his certificate of attendance at the end of the semester, when perhaps he has not been at the college more than a dozen times. This system has its friends, who argue that it is the only way to bring out the character of the man, and they outnumber some very bitter opponents who claim that the change is too sudden. Many a student, after attending perhaps a half dozen lectures, drops into a "kneip" or beer-saloon, and before he leaves it is completely charmed by a pretty "kelnerin" or waitress—these sirens include many of the prettiest women in Berlin. From that day the young student can be seen on a sofa in a corner of the kneip at all hours of the day, his "charmed" (?) charmer always by his side drinking three glasses of beer to his one. After a few weeks he engages the waitress as housekeeper. Indeed it may be stated here that many of the studious boys at the college have pretty, young "housekeepers." It is a quite prevalent custom here, and thought nothing of.

Many a good son has been ruined for life in the first years at college; others have been known to cut a terrible pace for two or three years, undermining perhaps their health, sometimes almost ruining their fathers in that time, and yet then settle down to the hardest of work and creditably pass the difficult "staats-examin" or national examination. The old story that such fellows make the best men is oftentimes verified. Another factor in the downfall of many a freshman is the good quality and cheapness of beer and that German inborn thirst for the same, of which, it seems, the "stud. arch." receives more



UPPER END OF MAIN STAIRS.

rather the question should be put to them, "What do they do with themselves?" And thereby hangs a tale. Before he is ripe to enter a college the German young man (supposing him to have chosen the architectural profession), must have attended the full course at a "gymnasium"—not a gymnasium for athletics, which is named "turnschule" here. He leaves the latter at the age of about nineteen, where he has been literally pumped full of all kinds of knowledge, including four foreign languages, Latin, Greek, French and English. The last

than his share. Although the students drink much and often I have not yet seen one really intoxicated, but, of course, they cannot work and drink their "fruh-schoppen," and other "schoppens" at the same time.

The majority of the students at the polytechnikum are a very studious lot. Their diligence surprises me. They are



CORRIDOR AT GRAND COURT, THIRD STORY.

divided into two classes: (1) regular students, including all who have the "gymnasium" diploma; (2) candidates having no such diploma, who can enter only as "hospitant." These pay higher fees and have fewer privileges.

The tuition fees are very small. Yet they are higher in Berlin than at other German polytechnikum. They are in proportion to the number of lectures the student wishes to attend and the ateliers or draughting departments he wants to work in under guidance. The fees are reckoned in this manner: for instance, I wish to attend eight courses of lectures during the semester or half year, occupying twenty-four hours each week, I pay 4 marks per

hour—96 marks for the course. For ten hours a week in different draughting or designing departments I pay 3 marks an hour, making 30 marks, a total of 126 marks for the whole semester. All these fees go to my various professors. Many of the instructors receive additional salaries from the Prussian government. It will be seen what an enormous sum is appropriated by the State for the maintenance of such an institution, the only source of income of which is the matriculation fee of 30 marks. It is another peculiarity of German colleges that they allow the student the choice of the lectures he wishes to attend each semester; even he who intends to enter national service, who must take in all on the programme for the four years' course, can do so as and when he pleases. At the beginning of each semester (there are winter and summer semesters, the former beginning on the 15th of October and ending on the 10th of March; the latter begins April 20th and ends about the 1st of August) each student receives a blank from the secretary, on which he writes the titles of his chosen lectures and draughting hours, takes it to the treasurer and pays the semester fees accordingly. At the same time he pays seventy-five cents to become a member of an association, the members of which are entitled to a lot of privileges, such as free admission to all museums, admission at half to one-third price to the foremost theatres, concerts and entertainments, the aquarium, zoological gardens and baths. He also receives the benefit of cheaper rates on some of the horse cars, and can buy books and instruments at one-half and one-third store prices. The student also pays seventy-five cents into the treasury of the "krankenverein," a grand mutual aid association among them, which, being worthy of imitation in our colleges, I will describe later on.

After having my blank signed by my various professors, and having solemnly given my word of honor to the Rector that I would live up to the rules and regulations of the school, I was completely enlisted in the ranks of the many thousand students of Berlin. I

had hardly got out of the Rector's office when I was buttonholed by a delegate of one of the fencing corporations which abound in German studentdom whose members disport themselves by mutilating each other's physiognomies.

Albert F. M. Lange.

(TO BE CONTINUED.)





NEW ADDITION TO MONADNOCK BUILDING, CHICAGO.



ARCHITECTURAL ABERRATIONS.

No. XIV.—THE NEW CITY HALL, JERSEY CITY, N. J.



FOR some reason the public architecture of the suburbs of New York has always been particularly vile. Perhaps one may extend this remark to the public architecture of suburban American towns in general in spite of some shining exceptions, one or more of which will probably occur to the reader in relation to the city he knows best. Our private building, on the other hand, is apt to be seen in the suburbs at its very best. The contradiction is not inexplicable. In the first place, the noticeable suburban houses are apt to be built by the best educated and the most refined dwellers in the suburb, as well as the best-to-do, while the public building is equally apt to be under the direction of citizens of the other kind. In the second place, the suburban house is apt to be designed to meet the individual needs and tastes of the family which is to inhabit it, and

the expression of that individuality, when it is intrusted to a competent designer, is a chief part of the charm. The opportunities for air and light and outlook are so very much ampler in a suburban than in an urban house, and the opportunities also for enlarging the house into a "place" by giving it a setting of sward and shrubbery, that no projector of a suburban house ever tries to make it look like a town house. If he did, his neighbors would think him daft to simulate a box with only one front meant to be looked at, and that can be lighted only at the ends, in a house that is visible all around and that may be opened on every side. But, unluckily, the projectors of suburban public buildings do imitate the urban public buildings. To have an artistic suburban public building would require, first, a willingness to have the status of their municipality as a suburb expressed, and secondly, discernment enough to choose an architect capable of expressing it. The first of these conditions is very apt to



THE NEW CITY HALL, JERSEY CITY.

fail in all American municipal architecture, and this for the obvious reason that the inhabitants of an American town of the second or the third or the fourth class are apt not to acquiesce in the existing status of their town, but to lay out their public buildings on the scale of the town that they hope it will be, when the "boom" has been fulfilled, to lay out their public buildings as part of the boom. Hence even when they have the luck to fall in with a good architect, and when the design shows sensibility and scholarship, it is apt to be more "cityfied" and pretentious than the facts warrant, and this pretentiousness is with difficulty distinguishable from vulgarity. When the municipality is a suburb, the suburbans are apt to project their works on a metropolitan scale. Thus one of the conditions precedent to an artistic and appropriate public building has failed. When the other fails also and an incompetent designer undertakes to sim-

ulate a public building more solid and costly than his client can afford, with an array of cheap finery, the resulting edifice fairly reeks of vulgarity, as reeks the new City Hall of Jersey City.

The building afforded an opportunity for an architect. It is completely detached, on a square of its own, so that it can be well seen all around, and each of its four fronts must be not far from 100 feet in lateral extent and is four stories high. These are more than respectable dimensions. If there was not money enough available to put up an ornate building in cut stone, as it clearly appears that there was not, there was evidently enough to put up a substantial brick building with ornament enough to relieve its baldness, so far as this could not be relieved by the composition. There was nothing at all in the conditions to prevent a building that would have been creditable to the municipality and attractive to the wayfarer. There wanted only an architect,



THE NEW CITY HALL, JERSEY CITY.

and it is the lack of him that has been fatal. The trail of the "architect" is over it all.

Finding differences among "architects" is not a profitable employment. Indeed, the illiterate and incompetent practitioner so strongly resembles himself, wherever found, that to have seen one of his works is to have seen them all. By a curious revenge of fate upon him, "variety" is the thing he always aims at and never attains, and the more he struggles for variety and novelty, the more monotonous and trite he becomes. His method is always the same. He desires to get as many "features" as possible in a given front; he desires to make each of his fronts as different as possible from the adjoining front. A piece of plain wall is his chief aversion. It seems to him that if he does not "do something" with it he is not earning his money or vindicating his capacity. Lord Melbourne's famous question, "Can't you let it alone?"

never by any chance propounds itself to him. To give a front a countenance it is necessary to him to furnish it with a minimum of two noses and four ears. If he cannot put on more things for the money in cut stone he cheerfully adds them in sheet metal. At all hazards he must have plenty of things, and his variety thus comes to mean nothing but thinginess.

His procedure is illustrated with an amusing naïveté in the work now under consideration. His principal front has things enough for a front three times as long. At the centre, to begin with, there is a porch with two columns on each side, with composite capitals, inclosing a Romanesque entrance-arch with two nook-shafts on each side. One is amused to remark here, as elsewhere throughout the building, that the carving is done "in place," as if the sensitive soul of the designer could not be appeased without seeing its actual effect in execution, an assumption

tion which becomes wildly hilarious when applied to forms that are transferred bodily from the "Stair Builders' Guide." Behind this portico rises a tower with three openings, which are two too many for its width, squeezed into its surface and extended through two stories with a most preposterous treatment of the interpolated transom. In this tower we have the "note" of the whole building. This characteristic is the squeezed and pinched appearance that comes from the designer's effort to get more things in a given space than it will accommodate, and all that it can be made to hold by extreme crowding. A front so composed, even if it were composed of good things, would be as incapable of dignity or repose as the platform of an elevated railroad car during the busy hours. In this main front, for example, which would be of a respectable expanse if let alone, there is squeezed on each side of the tower a slice of curtain wall; on the outside of each strip of curtain wall a pedimented tristylar Corinthian order; on the outside of each order a terminal piece of wall. This huddle of things would be fatal if the things were all good, and the things are all of an excruciating badness. Add that the building is divided vertically and in effect equally by a heavy modillioned cornice which would of itself preclude any effective composition of the front.

The counterparting front is a scene of equal activity. The central feature here, in place of the porch and the tower, is an arch in the two-story basement, which is Romanesque if it be anything, and in the second story a colonnade of three pairs of the leanest Corinthian columns ever erected. We should judge the shaft to be about thirteen diameters high. In fact, lankiness appeals with great force to the designer as an admirable architectural quality. The division of the fronts, the arrangement and the forms of the openings and the manner in which they are huddled, and the detail, all conduce to give the effect of spindling. These various arrangements are so successful that a front of a hundred feet in extent and only four stories high, or three-and-a-

half, becomes painfully inadequate to its height. The squeezed curtain flanking the central portico in the flank now under consideration is flanked by projected towers, with two openings crowded into the lower stage of each, and with a pilaster at the angle, attenuated like the central columns, which feature is repeated, after another crowded wall, at the angle of the building.

These two are the architecturesque fronts of the building. The other two, which are not architecturesque, ought to afford some relief, and indeed one is grateful to the architect for what he has here left out, but he has managed to make these fronts uneasy, all the same—

"And yet this old woman could *never* keep quiet."

The openings are here as slim and as squeezed as elsewhere. They differ, of course, in each story, those of the second having pediments that are about as exasperating as anything in the building, and any chance that was left to the wall of making an effect by its unbroken extent, is destroyed by the projection of the centre with openings in the upper story different from any of the others.

It remains to be added that the skyline is as tormented as the designer knew how to make it, mainly with cupolas over the towers bearing minarets, and entirely incongruous with any of the things below them, as many of these things are with each other. The culminating atrocity is that all this is cheap and imitative finery. Above and including the cornice all this ornament, excepting the urns at the corners in cast iron, is in sheet metal, the meanness and vulgarity of which are rather exposed than enhanced in the present state of the work by the fact that the pediments are faced with paper held in place with laths.

If one encountered this disreputable structure in Oshkosh he would say, how Oshkoshian; in Peoria, how Peorian—it is so rude and raw a travesty of the architecture of civilization. As a matter of fact, it is in one of the old-

est settlements of the United States, and within a mile or less of it is a respectable dwelling erected in 1666. This is not the brutality of a blundering beginning, but the hopelessness of a completed degeneration. The build-

ing which expresses the municipal aspirations and standards of Jersey City, and which would disgrace a municipality of South Dakota by its crudity and vulgarity, serves to show how exceedingly thin is our veneer of "art."





THE EDUCATION OF AN ARCHITECT.



ARCHITECTURE is the one of the fine arts in which the general public at all times takes the deepest interest. This interest is felt especially in America to-day, for in the very nature of our development we are a race of builders, and must remain a race of builders for many decades to come.

The public indeed have good reason to consider that the education of the architect is a matter of their own serious concern, for beyond the mere fact that the architect is practically an investor of vast sums of capital as no other artist is, he is the producer of works which in their very nature cannot be ephemeral; which cannot easily be laid aside and forgotten if they do not permanently stand the test of æsthetic judgment. His productions must remain to teach a daily lesson to those who, perforce, live with them—a lesson in refinement of taste and improvement of standards if they be real works of art; but, alas! a lesson of debasement of taste and standards, if they fail.

The problem before us as a building people seems in one respect to be new to the world of art. Architecture in the past at the first glance appears to have developed under conditions of artistic isolation which do not exist to-day. But the student of architectural history cannot fail to note that there has always been a strenuous struggle against this isolation; each style, as we call it, bears the imprint of all the influences under which it was formed; each race of architectural masters has taken advantage of all the architectural work of what was the past for them, with which they could become acquainted. History then surely tells us that we also must gain our inspiration from all the sources at our command.

The difference between us and our architectural ancestors lies chiefly in the fact that the complication of the problem set before us is far greater than it has been with any race of builders that has preceded us; for, until our day, historical study has been relatively rare and intercommunication of idea relatively slow and arduous.

So difficult is the problem, however, and so deep the concern of the public in

its solution, that I think it is well worth while to-day for practitioner and layman alike to consider with care the character of the education that should be striven for by a man who intends to devote his energies to the practice of architecture.

From the start, it must be remembered that all schemes of education must be devised to satisfy the wants of the average man of fair talent. We do not need to consider the man of mean abilities, nor are we called upon to prescribe for the genius. We may be sure that genius will not be crushed, but will force a hearing and lead the way under whatever conditions it arises. But we must surely see to it that our systems avoid the suppression of talent and place no obstacles in the way of the development of genius. There is, indeed, no slight danger of such obstruction. Systems fix standards, tend to make fetiches of them, to the defeat of attempts to alter, improve or revivify.

But if this danger be once realized, if it be acknowledged that the artistic pedagogue must work negatively rather than positively, must guide rather than lead, then I think all will agree as to the worth of systematic artistic education; all will acknowledge that it is valuable in the establishment of restraint, in the saving of labor, and in the fostering of the qualities by which the student may develop a correct and discriminating taste.

In what follows I shall not attempt to do more than to indicate some of the general principles which should guide us in giving this education to the artist architect.

The education of all art workers should aim to acquaint them: first, with the use of their tools; second, with the nature of the materials they are to employ; and third, with the general principles of beauty, especially as these are related to the special field in which the artist is to work. These numbers I give merely for convenience of consideration; for the architect the three subjects of study may be said to be of co-ordinate importance; they must be learned

by the artistic architect in one way or another; if his schooling does not teach him, he may gain his knowledge through what may not impossibly be bitter personal experience, or perhaps he may gain it at the expense of his client or of the public at large; but gain it he must.

I.

An architect's tools, to speak in the widest sense, are men. He must be able to inspire confidence, must learn to persuade his fellows, otherwise he cannot have opportunity to express his artistic impulse; but more than this, he must be able to command respect from his helpers, those intelligent tools so necessary to the production of his works. The wider his education on general lines, therefore, the better for him, as for all who find it necessary to deal with men diplomatically.

In the narrower, and more legitimate sense, the architect's tools are the instruments which in his own or in his assistants' hands aid him in the conception of his schemes, and make them possible of realization through the aid of his workmen.

It is evident that this study of tools is of far more moment to the architect than to other artists. He has to deal not with simple clay and modeling tool, marble and steel, as does the sculptor; not with oil and water color, brush and canvas, as does the painter; he must deal with these but with very much more; he must use other men, and their work; and also technical instruments of varied character to enable his assistants to catch his own meaning before they can make it comprehensible to the less intelligent mechanics.

This very complex nature of the tools he must use, not unnaturally leads the architect to an emphasis of work which is entirely preliminary to the attainment of his end; and this end itself is very liable to be lost sight of.

The final result of an architect's effort must be an æsthetic work in solid form; evidently therefore it is of the utmost importance for him to establish in himself the habit of thinking in the solid.

But in practice he finds it most convenient to make use of geometrical projections upon plane surfaces as a means by which the forms desired may best be indicated to the mechanics who are to produce them; and it is most natural therefore that he should be tempted to work over much in the flat, and that as a consequence he should unconsciously come to think in plain projections, and forget to think in solid form.

It seems to me that we have in this direction a serious error in the training given to the architectural student to-day. The planning of his buildings, the preliminary studies in the composition of his façades, can best be made by means of geometrical projections, and as planning and composition are the most important matters in the inception of an architectural work these projections must always be largely used.

But the student is usually compelled to work so long and arduously with projections that he is apt to lose the sense of the values of the solids into which translation must be made in the completed work; and this danger is emphasized by the current use of technical shadows by which the designer is often led to persuade himself that he will be able to reach results which are impossible of attainment.

Were all our buildings seen at great distances so as to appear practically in elevation the trouble would be less marked; but as we build to-day this is really very seldom the case. Compositions which are fairly harmonious in "elevation" upon the drawing board, lose too often all their carefully studied proportions in construction, when they are seen close at hand and from below, with roof line thrown back; and we not infrequently find eminently clever men producing designs of buildings which are charming in "elevation," but which when constructed are found to be extremely inharmonious from any possible point of view.

The force of this habit of thinking in projection becomes so predominant in many cases that we find its votaries, in judging of a piece of work, actually translating the effects of impression in perspective into an imagined projection. Their thought apparently

runs somewhat thus: "This effect is produced by such and such compositions and proportions, which we perceive must be elegant in elevation; therefore the design is a good one."

But it is evident that a building which is beautiful, not as seen by the average man, but only as thus translated, is not an architectural work of art at all. At most it can only claim to be the means of suggestion of beautiful forms to those who are skilled in this species of translation. Similarly the skilfully written musical critique enables the expert musician to appreciate a musical performance which he himself has been unable to hear: but no one would think for a moment of looking upon this critique as a work of fine art which could be considered to take the place of perfection in the music itself as actually heard. Such buildings should have their elevational designs built into their façades, perhaps as a prominent part of the detail, with inscriptions below the designs warning the unwary observer: "Do not judge the building as you see it, but consider that it is merely intended to suggest the decorative scheme shown here."

Now there are two ways by which we may avoid this difficulty: first, by teaching men to study in perspective; and second, by teaching them to study in models. By the *study* in perspective I do not mean the making of a finished perspective after the composition is altogether determined upon, but the sketching in perspective from the early stages of the designing. This is a trifle more difficult than the method of composing in the flat; but the difficulty is too much emphasized, and this because perspective is not sufficiently studied, it being taught theoretically, but used very little practically, in our best schools.

It seems to me that students should be led to use perspective methods naturally; should be taught to *sketch* out their *projets* in perspective, and then to translate them accurately in terms of such geometrical projections as are needed by the practical workman. This, it will be noted

would be reversing the general method of study. In fact we should lead the student to think of his building always as it is to be seen, and only secondarily as it is to be made to appear to his mechanical helpers, otherwise we are not teaching architectural design at all, but mere decorative composition upon plane surfaces.

There is this difficulty with the study in perspective, viz.: that we gain but one point of view for each drawing, and the architect will feel himself very unfortunate if the opportunities to view his completed building should be so restricted in fact. We may avoid this difficulty by the making of many perspectives, but more simply and satisfactorily by sketching in the solid—by making models in clay or wax or, at times, in paper.

It is not worth while to under-estimate the difficulties connected with such sketching in models; nor can any relatively large proportion of studies be thus made, but the value to the student composer is so great that I think every encouragement should be given to him to work in this way. With the model before us we are enabled to realize the light as it will truly fall upon the finished building, in other words, to see the *real* shadows; we are able to take into consideration every possible point of view, and to translate in most cases by direct measurement from the solid to the necessary projection upon the plane of the drawing table. The study of modeling serves another turn in bringing the student into touch with his brother artist the sculptor, in conjunction with whom he will so often have to work.

Sympathy with the painter, and acquaintance with his art, is necessarily involved in the consideration by the architect of his own work as a combination of color masses, as in the end it will be. There are dangers of self-deception in this study also, due again to the misuse of tools; the application of thin washes of water color to white paper is so simple that it is often used, and the brilliancy of the water color sketch is likely to lead us to expect much more luminous effects in our

buildings than we can obtain; shadows, too, are liable to be unduly darkened; window surfaces wrongly emphasized with resulting misconception of what the true proportions of the building will be.

But avoiding these errors there is great value in the emphasis of study in color if for naught else than to overcome the dangers connected with the easiest and most natural methods of representation in pencil or pen and ink shading, methods which photographic illustrative processes have brought into such prominence in our day. Buildings in reality show relatively very few lines, whilst the pencil and pen sketches represent by lines only. The constant use of pen and pencil is too likely to lead the architect into error by making him forgetful of differences of proportion produced by color distinctions, which cannot be represented in black and white; by leading him to overestimate the values of his shadows, and to trust to line effects which in the real building will not appear.

Although the student should, of course, make himself ordinarily skillful in the use of pencil, pen and brush, his education in these particulars being preliminary to his higher studies, I think that any great emphasis of perfection of technique in the preparation of drawings should be avoided, for this technique itself is too likely to become the absorbing interest, leading one to forget that the drawing is merely a means to an end, making of the student a draughtsman rather than an architect.

II.

I think it may be held to be a valid æsthetic principle, and one that is fundamentally in touch with economic truth, that the artist uses his materials best when he makes them serve to produce effects which cannot equally well be reached by any other art than his own, with any other materials.

This principle is the basis of Lessing's criticism in his *Laocoon*. It is the instinctive acceptance of the same principle in a different field that leads the best of water

colorists to object to the application of their color by the methods employed by the painter in oil, for thus they lose the characteristic luminosity which is gained when the white of the paper appears through transparent washes. It is the violation of this principle which gives force to the objection to so-called "programme music," which attempts to translate into musical tone what can be better expressed poetically.

Evidently, then, a thorough knowledge of the nature of the materials he is to use is of the utmost importance for all artists, and for the architect especially so, because of their very varied character.

The materials with which an architect has to work may be divided broadly into two groups: (a) the materials of construction, and (b) the materials of design.

(a) Knowledge of the *materials of construction* is to be gained by studies closely allied to those undertaken in the study of engineering. A man who is to practice as an architect should qualify himself in the first place to distinguish between good and bad workmanship and material, and the knowledge necessary for such qualification could most easily be obtained by a special course in some trade school. The late lamented Colonel Auchmuty contemplated the establishment of such a course, and in consultation upon the subject with the writer it became evident that it could easily be arranged to involve no serious expenditure of time on the part of the student.

That an architect should be an expert engineer is not to be demanded.

It must, of course, never be forgotten that the art of architecture has in the past been developed by the studied effort to make beautiful structural forms; but, be it noted, such structural forms as have become commonplace. In other words, architecture has developed by the application of æsthetic principles to already well-developed and settled methods of construction.

It must also be remembered that in

the past this process has developed naturally through generations. We nowadays attempt by direct educational methods to produce architects by a species of short cuts; to transform what has in the past been the art of a race, into the art of individuals.

It is evident then that we must teach our architectural student, most emphatically, to work in structural forms. But it seems to me equally true that in the education of the architect we should follow the developments of the past; *i. e.*, that we should endeavor to teach the youth the principles of beauty and how to apply them to structural forms which are already settled and commonplace for the race, as a race of builders.

It were well, as I have said before, to make the education of the architect as wide as possible in every direction, for the broader the man the more effective will be his work, so long as his dominant artistic impulse is left full play; but there seems no reason to *insist upon* the attainment of knowledge of highly technical engineering methods which are useful only for the solution of *new* structural problems; although it will, of course, be desirable if possible for the architect to gain acquaintance with such methods.

It is no more logical, it appears to me, to insist upon these advanced engineering studies than it would be to insist upon a knowledge of the intricacies of analytical chemistry because the architect is to deal with materials which can only be tested chemically or which are effective only through chemical action; or to demand acquaintance with the higher problems of molecular physics because he has to do with the strength of materials; or to compel familiarity with the doctrines of evolutionary science because he is to learn the practice of an art which in its history shows most markedly the processes of development.

Of course he should know thoroughly the underlying principles of engineering method; the way in which the strength of materials and foundation values are determined, and the most practical forms of construc-

tion in stone and brick, wood and iron ; especial attention being given to the nature of arch thrusts ; and he should be able to work out the less complicated problems in each case.

But beyond this, all that he needs to know are the general forms within which he may work economically. He must learn to *think* constructionally ; so that the roofs, the arches, the vaults he *sketches* may be constructed without extravagance and effectively on the lines indicated as he sketches. Beyond that, if he is to avoid the loss of personal influence upon the artistic character of the work, where his problem is a complicated one, he must in practice, in the calculation of the values of particular parts, yield to the special skill and judgment of expert engineers whom he or his client employs to aid in the perfection of construction. Too often the architectural student is forced through much of the course of civil engineering which can never relate to his work in after life.

It is easy to make too much of the importance of the emphasis of constructional forms in architectural design, and I am not one of those who feel that an architectural work should *necessarily* attract attention forcibly to the constructional methods employed ; although it is surely an added charm to the thoughtful observer if he is enabled to see the methods so emphasized, provided this is done without loss to the beauty in other directions.

On the other hand the importance of a thorough knowledge of constructional *principles* to the architect becomes evident when we consider that it is a negative principle of æsthetics in general that we must avoid shocks in æsthetic result. Under this general principle the architect should surely feel himself called upon so to design that if constructional forces compel attention as one views his finished work, the counter forces by which they are held in equilibrium may also be apparent. Furthermore he should use care that there appear no evidence of waste in construction, nor indications of the use of unnecessary material, unless it be clear that this material, if superfluous

from a constructional standpoint, is nevertheless quite properly employed for the legitimate special purpose of adding to the beauty of the work as a whole.

(b) The consideration of the *materials of design* brings us at last to the æsthetic questions which concern us.

As I have already said, the problem before us to-day differs materially from that presented to any previous race. It is true that each type in the past has been evolved as a development of all the types of earlier architectural work by which the younger race of builders has been influenced ; and as historical study and intercommunication have increased, we note a widening influence of broader fields. But with relative suddenness we, in our age, are brought face to face with influences from all the work of the past ; we know, or may know, by history, by travel, by photographic reproduction, as well the Greek, the Romanesque, the Gothic ; and also each of the composite styles which have developed where more than one type distinctly influenced thought, *e. g.*, the Roman work, the Gothic of Venice, the Chateaux types of France. Now it seems to me impossible to consider an architect *fully* educated who has not learned the value of the beautiful things that have been built in *all* types ; therefore, an architectural education to be complete should cover the widest ground, and no system can be held to be satisfactory which emphasizes the study of one style to such an extent that it crowds out full appreciation of the beautiful in other types of design. Unfortunately this result is noted in many of those who study in our best known architectural schools.

Two points must be made here to avoid misunderstanding. First, it is evident that the student must be led to follow some orderly arrangement or he will lose himself in multiplicity of detail. It seems to me altogether best to begin with, and to give prominence in the early training to, that type which has best stood the test of time, and which has served as the inspiration for the largest part of the best of the

composite developments: I mean the Greek, pure and simple, not Greek in the vernaculars of Rome or of Paris, which should be studied later, but the Greek of Athens and Corinth.

This earlier training, however, should but lead up to the study of the developments of work by other races which has ended in the production of notable æsthetic results. This implies the serious study of architectural history, and the closer this is coupled with the study of art history in general the better for the student. For thus the truth is forced upon him that art is a living growth and that his own art is but a part of a wider life; thus is he brought to feel a close sympathy with his fellow artists in other fields, a sympathy which it is most desirable to foster.

In the second place I must not be understood to favor a careless eclecticism in design. Relations of parts and treatment of details of structure and ornament that have been used for hundreds of years cannot be lightly changed; for in the first place they gain authority because they represent the residuum after the elimination of what has been the less pleasing to multitudes of artists in the past; or, in other words, represent the æsthetic choice of innumerable cultivated men: and, in the second place, one cannot carelessly alter relations to which we have been long accustomed without producing shocks in the minds of those most knowing and most cultivated of his observers, and these painful shocks are fundamentally non-æsthetic.

It is as undesirable to be ungrammatical in architecture as it is in literature, and it is difficult to over-emphasize the value of purity in style.

But the dangers of crass eclecticism are not difficult to avoid. Historical study, if thorough, will necessarily prevent too wide a freedom in this regard. And if this danger be avoided surely the wider a man's knowledge of the forms of beauty that have been conceived by man in the past, the more capable will he be of expressing his special problem in a manner that will charm, whatever be the special type in which he works out this expression.

The importance of this wide knowl-

edge of architectural forms is emphasized when we consider the matter from another standpoint. We all recognize that we are to a very large extent creatures of habit; our habitual surroundings go far to establish our standards of taste in architecture as in all other æsthetic matters. If the forms to which we definitely habituate ourselves are not recognized in a special building we naturally feel a shock of opposition, and it is easy to see how thus a man who limits his educational study to certain special types will be not unlikely to build up within himself a purely artificial intolerance of any other types than those which he has especially wrought into his life. Unless he be a man of great force he may find it impossible to cast off this obstruction to such wide æsthetic appreciation as must be fostered if one is to hope for artistic effectiveness.

A man who has during all his life been accustomed to the roofs of the Paris boulevard façades will find it difficult to design a façade for a similar building without some sort of superstructure above the heavy shadow lines of his cornice. It is easy to imagine that a Greek of old, could he be resuscitated, might consider such superstructures a despicable abomination. And it is equally certain that a man who had lived all his days, say in an English college court like that of St. John's, at Cambridge, would question the constructional rationality and even the æsthetic quality of a façade with this exceedingly deep projecting cornice mass, running across the façade at a distance from the top which would seem to him to be entirely fortuitous.

But surely the old Greek would be as wrong in his total denunciation of the French development of his own inventions, as would be the supposed insular Englishman. Neither of them, however, more stupid than the Frenchman, who heaps indiscriminate disdain upon all things English in architecture. Surely there are beauties to be found for each in the other's work; and as surely we cannot hope to attain any full appreciation of fundamental æsthetic principles unless we study sympathetically, however critically, *all things* that men have called beautiful.

III.

From these considerations we step easily to the discussion of the most important æsthetic problem which confronts us. How shall we teach the principles of beauty, especially as related to the art of architecture?

Science, so far as it has been turned to æsthetic problems, has little help to offer us. She has taught us something of the relations which bring about musical harmonies and dissonances, she is able to guide us in our study of color contrasts, she tells us something of the rectangular surface forms, which, when emphasized, prove to be most pleasant to the average man;* but it is evident that she is not yet in position to help us to step beyond the more elementary and cruder methods of comparison of experience. In other words, the best course open to us is to study, and study to know, those works which have seemed best worth calling beautiful by the most cultivated men in the past; the works which men have delighted, and do still delight, to honor for their intrinsic æsthetic qualities.

Now it is apparent that the best natural method of learning thus is reached by life in an "atmosphere" of high æsthetic quality so that the student will learn naturally, will breathe in with the air, the appreciation of what is good, and as naturally learn to feel a shock at what does not agree with high æsthetic standards. For few of us, however, is this possible under natural conditions, and a most important step in any artists' education is made when he has gained for himself this "atmosphere" in more or less fullness.

This artistic *entourage* should, if possible, be as broad as all of art, for by unrestrained assimilation from many sides the student will best learn, unconscious of the learning, the unanalysable principles of beauty in its widest sense. But especially must the

architect, whilst a student and in after life, live, so far as may be, amidst the best that has been done in architecture. If he cannot live permanently in a land of great architectural art works, he may see them by travel, which is daily becoming easier, or most fortunately for him, in our day, he may surround himself with photographs and casts and models of the best work, so that daily and hourly it may appeal to and instruct him.

The man who cannot live amongst great works of art, but who *can* travel has the satisfaction of knowing that he who lives amongst specially great art works, but who does not travel, has a more limited view than the traveler can obtain. And I may add here, that shorter and frequently repeated trips are much to be preferred to longer trips at greater intervals; for here, as with all other studies, one fails to assimilate when one is weary, and long journeyings for sight-seeing tire the student rapidly in the very directions demanding vigorous activity. Moreover, the inspiration gained from seeing works of art needs to be renewed if it is to remain effective; the impression all too soon loses its force.

The man who can neither live amongst artistic surroundings of high value nor travel, has the satisfaction of knowing that photographs if properly and systematically studied are the best tools the traveler and the resident himself can use, and these tools are easily his own. They cannot give him color nor all the shifting beauties which are too ephemeral to be caught by a fixed monocular being, such as the camera is; but they go far to give him the basis for comparative study, which after all is the most important part of an architect's education before and after he begins to practice.

And here let me add that very much depends upon the student himself. The school may force a man through a prescribed course to the attainment of a diploma. The teacher may do much to guide and to help the growth of taste and skill, but the student must himself work assiduously towards the goal if he is to reach effective result. It is

*The noted Fechner's work on this subject has lately been most effectively supplemented by Dr. L. Witmer, who has shown conclusively that the average man prefers a rectangular form (when that form is the prominent æsthetic element) whose sides are approximately related, as 5 is to 8. See *Zur Experimental Ästhetik*. L. Witmer. Leipzig: Englemann. 1893.

greatly to be regretted that with architecture as with all education, the *habit* of study is not oftener acquired; that in most cases study ceases as soon as the restraints of the school are removed. Our active architects too often become over much engrossed in money-getting and find it difficult to give due time to the thought that is needed to the perfection of their work; and, for lack of time to think and study, are too often found using the photograph too freely as mere copyists.

But if one avoid this misuse I know of no more effective means of educating the taste than the adoption of a system of comparison such as the access to large collections of photographs makes possible. To compare works of a similar type, the solutions of similar problems; to eliminate the less pleasing; to choose, finally, the one example best liked; to compare one's choice with the choice of others, with that of fellow students, then with that of higher authorities, and with the judgment of the race which has held certain buildings from destruction merely because of their intrinsic beauty, perhaps long after their practical usefulness has passed away: such a serious system of study cannot fail to go very far towards giving the student what he aims to gain, a refined and discriminating taste.

In this comparative study it should always be remembered that buildings are to be considered from three points of view, whether we are criticising the finished work or are designing some work still unconstructed.

First, we must consider their appearance from a long distance; second, their appearance from a distance of say 200 or 300 feet, from which distance details are lost and proportions and composition alone become important; and third, their appearance when one is very close at hand.

The consideration of the first point of view is only important where buildings are, or are to be, of monumental character and are to rise up above the objects which surround them.

The consideration of the third point of view is of moment in relation to the

permanence of the impression of beauty upon an observer. Long after one has ceased to study the beauty of general proportions will he obtain delight in the examination of the details which may be near at hand. It is not to be forgotten, however, that these details are each and all interesting for but a relatively short time at best; that they are the parts of a building that nature's forces first attack, the parts which first fall into decay unless they are so precious that they are cared for by watchful lovers of the beautiful. And on this account it seems clearly best in matters of detail to concentrate our efforts, so that we can afford to employ the highest talent at command in the perfection of these details, whether they be carvings or mosaics, decorated wall surfaces or glass; never forgetting, however, that the detail must always be made subordinate to the effect of the building as a whole.

This brings us to the consideration of the second point of view which is in my opinion the most important of all. Details may rot away or we may tire of and avoid thinking of them; but the elements which remain and which are to determine the final acceptance of the building as an æsthetic work are its main proportions, the relations of the masses of color in composition. It is the perfection of these permanent proportions that compels the admiration of men in the end; it is this that delights generation after generation, and it is the great lack of this proportional perfection that convinces a careful student that we American architects have yet to learn the very rudiments of our art.

In connection with these remarks concerning the importance of study it may be well to note the dangers connected with rapid designing. Students are often given architectural problems of which they are compelled to present sketch solutions in a very short time; these sketches being made the basis for future development. It is evident that such practice will be advantageous to a certain degree in teaching the student to deal with emergencies; but it is also evident that it will be principally advantageous for one who

thinks less of his art than of catching clients by clever trickery; or for the superficial man who wishes to have a large stock in trade of "types" which he may be able to pull out of his mental portfolio upon the proper occasion. But seriously speaking, whilst such training does not work against the study of detail, it is evident that, if it go very far, it must necessarily be directly opposed to the acquirement of habits of study, in adaptation of plan and of composition.

Now arises the question, how shall this education be obtained? The apprentice system still in vogue in England, and to some extent in this country, evidently must give way—for the advantages which come with personal contact with a master under this system are outweighed by the disadvantages which arise from the inadequate systematic training attainable under such a method. The architect preceptor, if he be a man of marked ability, is liable to be too much occupied in his profession to permit him to give detailed, watchful attention to the individual needs of his pupils. The system is as certain to disappear as the ancient systems of legal and medical and theological studentships, under eminent men in the several professions, have disappeared in favor of Schools of Law, Medicine and Theology.

The *atelier* system in vogue in connection with the Paris École has great advantages in this matter of personal influence by the master upon the student; but such a system is of course only valuable where the head of the *atelier* is a man of wide practical experience and of acknowledged artistic ability. Few such men in any country can be relied upon to give conscientious attention to the work called for; and in our land, where the pressure upon every man of ability is so extreme, it seems to me impossible to expect any permanently valuable result from the adoption of such a system.

The advantage of personal contact with an efficient practitioner of the art is so great, however, and the necessity of acquaintance with methods of practice so urgent, that the student,

after his schooling has been completed, or while he is studying, should spend as much time as he can afford to give in the studio or office of such a master, before undertaking a practice of his own.

In the special school, therefore, the architectural student must be advised to gain his training; choosing, of course, the best institution at his command. But he must be prepared to supplement the teaching obtained in the schools in many directions. For, if the principles above enumerated be valid, it must be apparent to all who know the schools as they now exist that there is no one which comes up altogether to the wished for standard.

The interest in artistic things, which it must be agreed is so highly important to the student, is fuller and more intense to-day in Paris than in any other city in which an important architectural school exists, and the architectural course in the École des Beaux Arts is attracting many of our young men. But I think the most ardent admirer of the École will agree that the system adopted there has serious defects if the standpoint taken in what has preceded this be correct.

If the schools in our own land fail also, this is due largely to the fact that they are too closely attached to other schools of which they form relatively small and unimportant parts, and to the additional fact that the limited resources of the institutions which control their management prevent the full development of special courses, and of the libraries and galleries so necessary if the best results are to be obtained.

The best of our schools are indeed doing fine work under the conditions which now limit their growth, and there can be no doubt that great gains will be made in the near future.

But perhaps, on the whole, we are demanding too much of the Architectural school itself. After all, the education a man gains in any direction depends very much upon his own character, and so long as his preceptors start him aright and give him such an impetus as will enable him to develop himself we should perhaps ask little more.

If the schools as they now exist do not

give him all that he demands, and exactly as seems best for his full development, the student has the resource of work outside of the school upon which, in the end, turns the advance of each individual in every line of work if he is to look forward to any notable attainment. But always must he keep well in

view the end before him; and be watchful that he escape the danger of wandering from the path because of interests apart from the end; and that he does not stop in the way itself, forgetful of his goal, or mistaking some necessary point of attainment by the way, for the goal itself.

Henry Rutgers Marshall.





NEW BOOKS.

The Cathedrals of England and Wales. The Builder Series. London: The Publisher of *The Builder*, 46 Catherine St., W. C. 1894. Large folio, 17x23 inches; many plates.

This curious book announces itself as made up from the work of different authors to such an extent that it has been thought best to leave the descriptions and criticisms without the authors' names, except in cases "where they had a special personal interest in and knowledge of the cathedral in question." Moreover, "where the article has been entirely by one writer, engaged to undertake it, his initials have been added." It is odd to find so frank a statement that nobody in particular is responsible for the greater number of these descriptive and critical articles. It may indeed be assumed that H. H. S., whose "initials have been added" to the preface in which the above cited statements are made, is the responsible editor, but nothing is said to that effect. A direct invitation is given therefore to disregard the text, except "in the case of Canon Venable's article on Lincoln;" in the case of Mr. Waller's text for Gloucester, and Mr. Ferguson's for Carlisle, these two being the architects in charge of the two cathedrals in question; and in the case of "Mr. Beresford Pite's remarkable article on Ely Cathedral." Except in these instances, it appears that the reader might disregard the text or prepare to accept its statements with caution. In such treatises, of what weight is anonymous work? Of none! Even a guide-book is the better for having a known and responsible author, and modern guide-books often have that advantage. The anonymous work can only be considered as a guide-book, but, from its folio size, an

unfit one to carry to the spot where its assertions may be verified.

The book is indeed to be considered chiefly as a collection of plates. As regards the plates then, thirty-two cathedrals are illustrated, each one by a large scale plan, minutely lettered and figured, one general view, and two or three pictures in the text. These illustrations seem to be all process reproductions and as unsuccessful in the way of drawing and reproduction taken together as English prints of the kind generally are. When will the English draughtsmen learn that the object of lettering a plan is to name and describe its different parts, that the object of figuring is to give the dimensions of its different parts, that the object of indicating upon it in dotted lines the plan of the vaulting overhead is to teach the student something of the structure which rises from the walls and piers shown in horizontal section before him? Assuredly those different objects are not obtained when letters, figures and vaulting-lines confuse one another, either to absolute illegibility or to great loss of time and great fatigue of the eyes and head. It seems that in the preparations for this book the matter of estimating the proper size of letters, etc., intended to be reduced by photography, had never received attention. When, moreover, will English draughtsmen learn to make their artistic drawings of exteriors so as to suit the photographic process to be employed, and the process men to work in harmony with the draughtsmen? Did any one ever see an English perspective view shaded and rendered with pen and ink and reproduced by photo-process, that was otherwise than ugly and in part incomprehensible? Yes, there

are a few instances; thus, in this volume, the drawing of Truro Cathedral, by Mr. A. N. Prentice, is very good, at once artistic and intelligible, easily done too and without the signs of wasted work. Mr. H. W. Brewer's drawing of St. Alban's, and that, by the same artist, of Rochester, though less attractive are perhaps equally intelligible and useful. Mr. R. W. Paul's drawing of Bristol Cathedral may almost vie with Mr. Prentice's above named. All these are photo-lithographs from pen drawings and there are others which have been made in the same way, but the majority of the large plates are stated to be made by an "ink photo-process," which gives the best imitation of a very pale and feeble old-fashioned lithograph than can be imagined. These have very little information to offer. Faithful they are, no doubt; there is every reason to suppose that a uniformly conscientious fidelity has controlled all these drawings; but the paler and lighter ink photos are very ghost-like and vaporous and none of them has much to say about the building except the general arrangement of its masses.

The book is furthermore as awkward and ugly as a book can well be, with print too fine for the immense double columned page, and the leaves of thick paper merely stuck to the back, without sewing and without mounting on guards except in the case of the folded plates of double size.

So much about the defects of the book, which we should not have dwelt upon to such an extent but for its decided merits. In the first place, every one of the thirty-two cathedrals is illustrated by a plan carefully drawn, signed by the draughtsman, on a scale so large that every change in the thickness of walls or break in their direction, every difference in the size of piers or buttresses and every minute peculiarity of the structure or its appendages can be set down. The dates of the masonry are given by the rendering of the sections in solid black hatching lines, dotting, etc., and this to the extent that a pier originally Norman and pieced out for greater strength by later work of one or two epochs, has its history clearly given in the diversified surface of its section. These plans are announced in the preface as "the first collection ever published" of such plans "to a large scale, and the accuracy of which can be depended upon." It is stated, that every pains has been taken to get them absolutely accurate; entirely new surveys have been made when necessary; there can be no doubt that they are trustworthy. The main value of the book then is in these plans and in their use to elucidate photographs; to make of one's photographs in daily

use solid existing monuments instead of mere pictures. The extreme difficulty of procuring trustworthy plans of English churches is known to all students, and is illustrated by the rarity of such helps in Murray's "Cathedral Handbooks." It is true that you can get twenty men to sit down and make, with the camera lucida or without it, interesting drawings of detail, for one who will spend a few hours in measuring and plotting the exact plan of the corner or bay which his drawing represents. Why else should such valuable books as Nesfield's "Specimens of Mediæval Architecture," and Shaw's "Architectural Sketches from the Continent," books containing so much evidence of faithful and loving labor, be published without even partial plans? How uncommon good plans are and how little recognized as necessary to architectural study may be illustrated by a recent most valuable French book, "L'Art Gothique," by Louis Goussier. In this book with its folio size page and its wealth of photographic illustration, devoted as it is also to the full description and critical analysis of the most constructional of all styles of architecture, there are no plans but the small outlines which give the whole disposition of a great structure in ten square inches of paper. Detailed plans, showing what construction is in horizontal projection, it has not been thought worth while to offer.

We say then that the possession of this present volume of plans would double or treble the value of a collection of photographs of English Cathedrals. The twenty or the fifty pictures you may have before you, of Canterbury, for instance, or Durham, and which are never by any chance fully named and described by the maker of them, you can locate by the help of such plans as these, and in doing so you double their value. What its value would be without the photographs is not so clear, because there are very few detail-drawings in the text and never but one general view of any one church. It should be stated, however, that that one view is often from a point of sight not often selected by the photographers; perhaps even inaccessible to them, as is sometimes explained in the text.

La Peinture Décorative au XIXe Siècle. L'Œuvre de P. V. Galland, par Henry Havard, Inspecteur Général des Beaux Arts. Paris: Ancienne Maison Quantin. 1895.

This is the record of a life of the most constant and well-directed work in the way of decoration. A man of exceptional abilities who began by studying architecture with Henri Labrousse and painting with Michel Drolling; who

left the studios of those artists to work with Ciceri as early and as soon as he could possibly get employment in that master's busy workshop, and who started for Constantinople at the age of twenty-nine, taking with him four or five assistants, with the engagement to decorate a palace there, on a great scale of expense, of splendor and of free and untrammelled design, such a man is a professional decorator indeed. His life is interesting reading for all those Americans who are inclined toward the artistic side of architecture, or toward the architectural side of painting or of sculpture. The Turkish palace kept him busy for a year and a half, and then the work was stopped. The French artists got back to France as best they could before the Russo-Turkish war of 1854 was fairly begun; only Léon Parvillée was left behind "tied to a big sabre" in his capacity of officer of ordnance under the Turkish government, but free to begin that study of Turkish architecture and decoration which has given us the only book on that subject which the Western world possesses. Galland, meanwhile, was set to work making cartoons for tapestry for the Imperial Gobelins establishment and painting in the chapels of the Church of St. Eustache, and upon three large ceilings for the Marquis Casariera. It is most unfortunate that all this early work and everything of importance done by him before he was thirty-two years old, except perhaps some private work, inaccessible or hard to trace, has been destroyed. The conflagration of 1871 swept it all away, even the tapestries. But there remains his curious journal, and some studies which are reproduced in Mr. Havard's beautiful book. Galland had begun the preparations for a large publication, a series of *cahiers* or portfolios as we should say, of designs for trophies of arms, groups of children, emblems of music, literature, art, etc., and the like. There are many such books in existence, but the specimen pages given here by photography make one regret that this work also was never completed. More especially does one sorrow for its nonappearance on reading here that he began by painting his trophies and groups on a large scale, on canvas, apparently in monochrome. If he had had photographic processes to use for making fac-similes of these great paintings, it would have been easier for him to utilize them; very probably he would have gone on with the work, if he had not had to face the task of lithographing them, every one. The true decorative painter shows in that practice of full-size painting—"grandeur d'exécution" as our text has it, meaning probably of the size which he imagined

as best for the carrying out of the piece of ornament on wall, vault or ceiling. Each composition, first drawn at this full, working size, would bear reduction and subsequent enlargement. Galland's studies of the details of plants seem much less valuable. He was evidently impressed with the idea that a flower or a sprig could be analyzed for art as it might be for botanizing, and he covered sheets of paper with minutely finished drawings of portions of flower, leaf and stem; not, it would seem, a useful exercise unless for the beginner. This, however, was but a small part of the varied and really prodigious labor which he gave to the study of nature. The action of children, the gestures and attitudes of children as compared with those of grown persons, the colors of the landscape, the effect of sunshine on leaves, and the peculiar effect of the shadows of trees with the sun making soft-edged circles within the general shadow, the movements of a butterfly, of a caterpillar—all were the object of constant observation and memoranda made with pencil and with pen. He was troubled as every painter is with the garments and drapery of flying and floating figures; how to make them shudder in the wind and how to make them cling to the body in the right way. One day, under one of the great archways of the Louvre, the "guichet," opening on the quay, he noticed how the gowns of women clung to their persons and blew out behind; on getting home he noted down the swirling drapery as he found it fixed in his memory and went back to the spot frequently to study it again, presumably on windy days. Nor was his work confined to the study of natural fact—he observed that women dressed *avec fermeté*, as he expressed it, that is to say in strong and positive colors, combined far better with and were much more pleasing in the Parisian interior, always white and gold, than those women whose dress was made up of delicate *nuances* of color; he noticed that the gold required strong colors, and that costumes of neutral colors and demi-teintes failed in the same surroundings. He was afraid, too, of having his decorative figures look too natural. He tried copying objects of all sorts, including the human figure, from nature, and then painting from his copies. He tried a more elaborate experiment with the purpose, as he says, of bringing a new sentiment to bear on things *qui ont de la tournure*, that is to say which have already artistic character. His plan was to model in clay the children in early Italian pictures, to make drawings from the casts taken from these models and to compare these

drawings with other drawings made directly from the paintings. Many drawings reproduced in this book show how carefully and thoroughly he carried out in execution the maxims laid down and the systems of work proposed in his journal. In one drawing there are four studies for the same gesture of a child, requiring care to discriminate one from the other. In like manner when the Greek vases in the Campana collection were made public, he speaks in his journal of the impression they made upon him and a reproduction shows drawings made from such Greek vases; drawings made without the slightest attempt to give their exact forms or the flatness and slight contrast of their painting. He has treated them in his first sketch as objects needed in his own painted decoration.

Galland was a painter of easel pictures also, although much that he might have turned into pictures of the common sort was left in the state of *esquisses peintes*. No doubt the demand for his finished easel pictures was less constant than that for his services as decorator. Still he has left pictures both of landscape and of genre, and these to judge by the photographic reproductions are full of artistical interest. He found, however, that unless he would exhibit at the Salon he had little chance of the common immortality of those artists who contribute to the annual exhibitions. Our author relates his feeling of disappointment at the non-appearance of his name in a dictionary of artists in 1883, and his remark, "it seems then that one must exhibit in order to be somebody."

In 1873 Galland was appointed a professor in the *École des Beaux Arts*. A special chair was created for him; the chair of decorative art. It was a higher class of decorative art that he was to teach; his pupils were the architects of the first class and the prize winners in sculpture and painting. He understood his duty to be not to teach drawing or painting, not to teach sculpture, but to show his pupils how decorative painting and decorative sculpture must be handled; how they must help one another in order that they might not hurt one another. To the architects he had to say much about what they had to do in providing for decoration. To all he had a definite doctrine to teach; the interdependent

and in this way exceptional character of all artistic work done to harmonize with other work in a general decorative composition. It appeared, however, that it was impossible to obtain recognition by his fellow artists, the other professors of the *École*. They were not willing to admit that their pupils needed other teaching than their own. One declared that if the artist ever had occasion to think of the minor details of ornament he could easily get a special assistant for that kind of work. Another refused to vote or act in a commission of which Galland was a member, and called on him purposely to say that this was not an insult but that disapproval of Galland's position in the school influenced him. "Taste is not to be taught;" that was his position. A third brother professor told him in so many words that the school had no need of him, "It was manifest to me," he writes, "that my professorship was sincerely considered a superfluity by the greater number of my colleagues. How was the necessity to be demonstrated to men who had not the slightest idea of the teaching to be given?" He found the painters satisfied to paint and to teach others to paint pictures, quite indifferent as to whether those pictures were to be on ceilings or on walls and as to whether they were to be cut by 'string' courses, pierced by doors, warped by covers and vaults, or lighted by irregular and varying daylight. In other words, he found that they did not believe in mural painting as a special form and subdivision of art, nor in the matter of decorating a room or a building as being in itself worthy of study. After five years of struggle he gave up the contest and devoted himself for the rest of his life to work at the National establishments of the Gobelins and of Sèvres; to painting in the Hotel de Ville of a series of cupolas, including decorative panels with workmen at their trades—most admirable compositions; to the great wall picture of the Preaching of St. Denis in the Pantheon and to work in private houses of seemingly endless number. The record of his many triumphs and that of his few failures are equally interesting and instructive, and the book which contains these should be the study of everyone of our American artists who has the habit or the love of decorative work.


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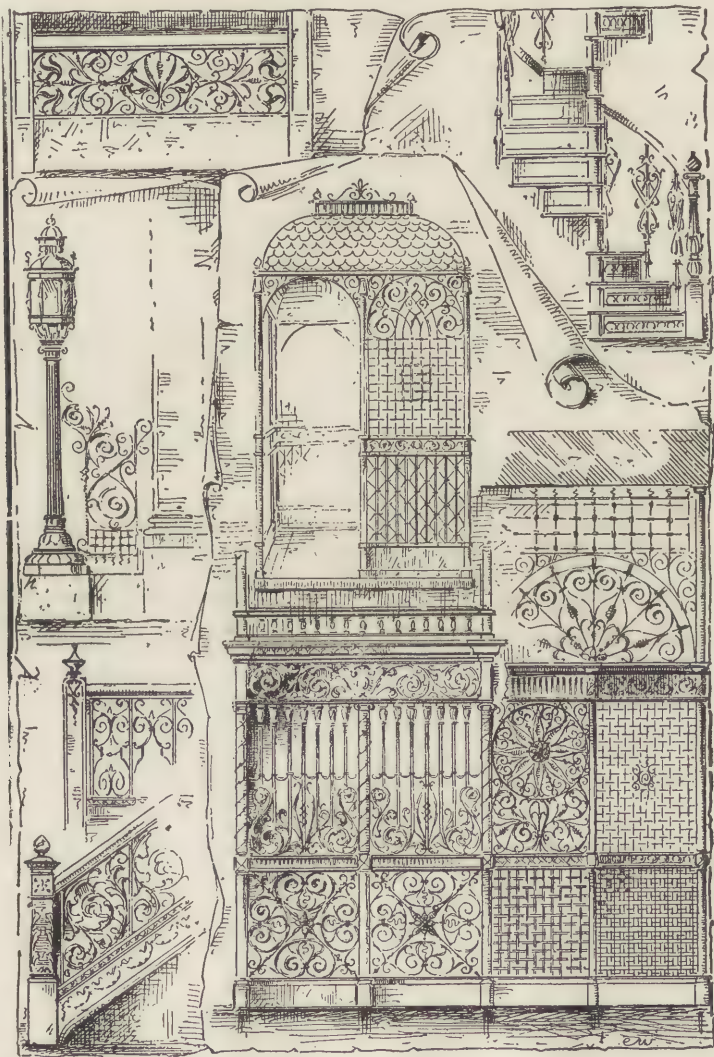
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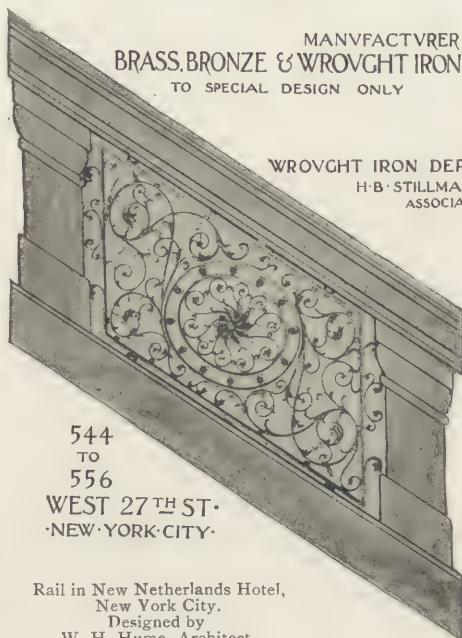
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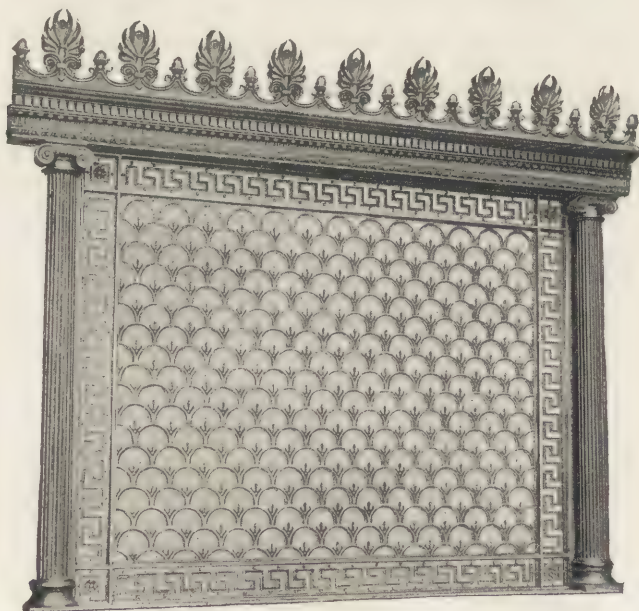
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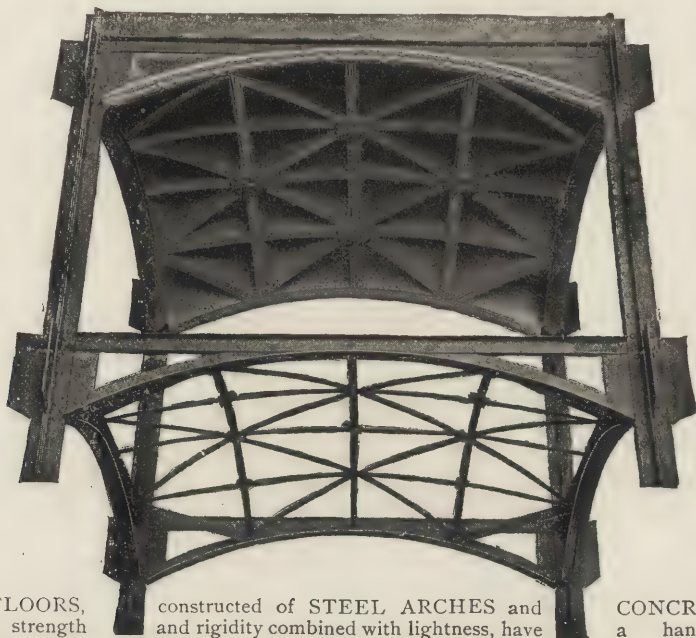
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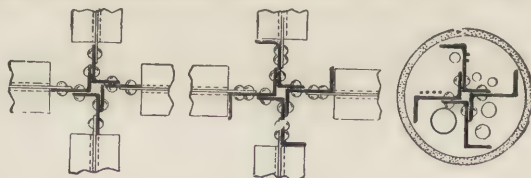


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DEAR SIR:—I have taken a good deal of time to answer your question in regard to a natural cement mortar in the setting of limestone. This delay is because I have been among the architects, as I could find the time, to learn their experiences in regard to this matter, and all that is known here reduces itself to this:

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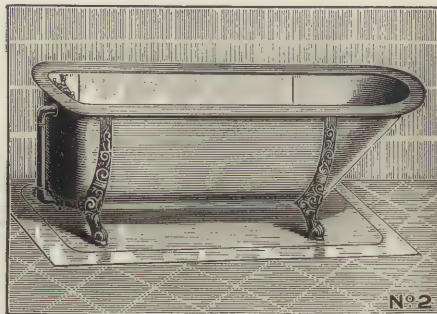


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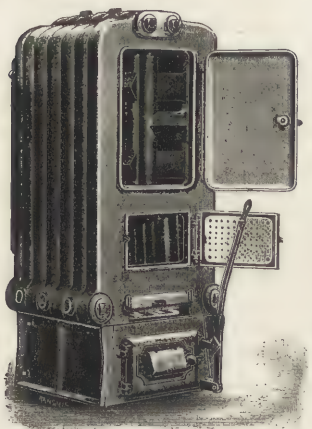
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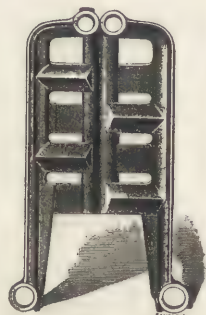
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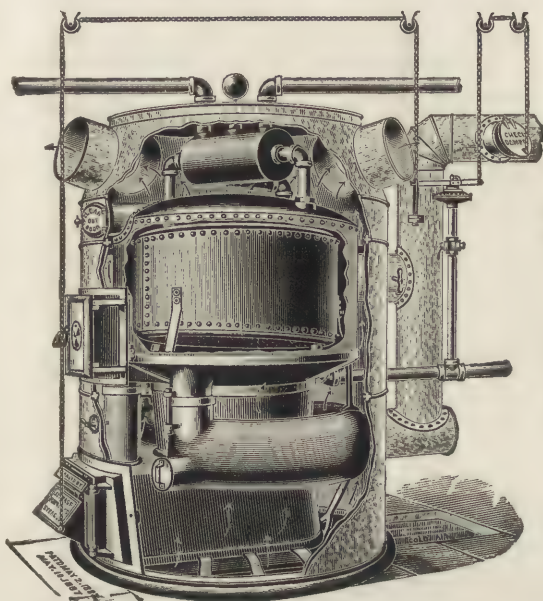
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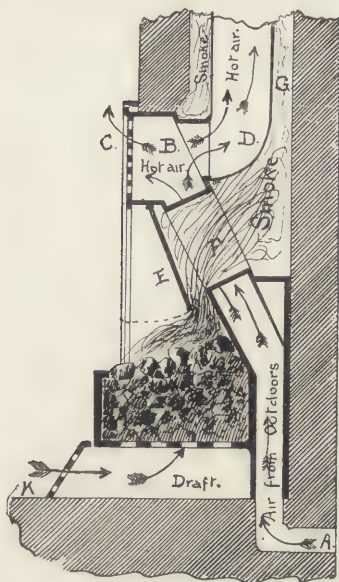


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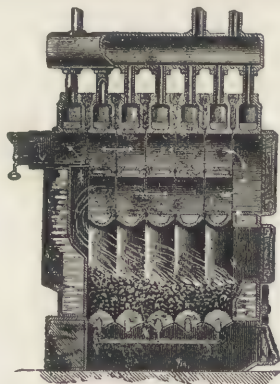
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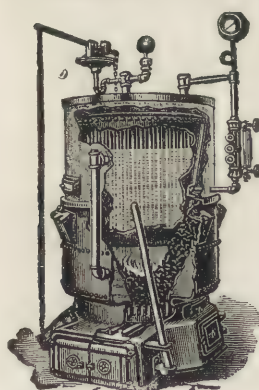
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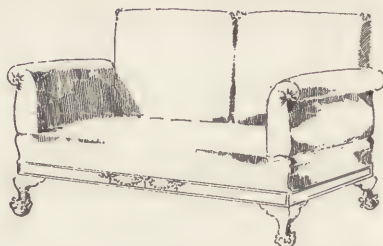


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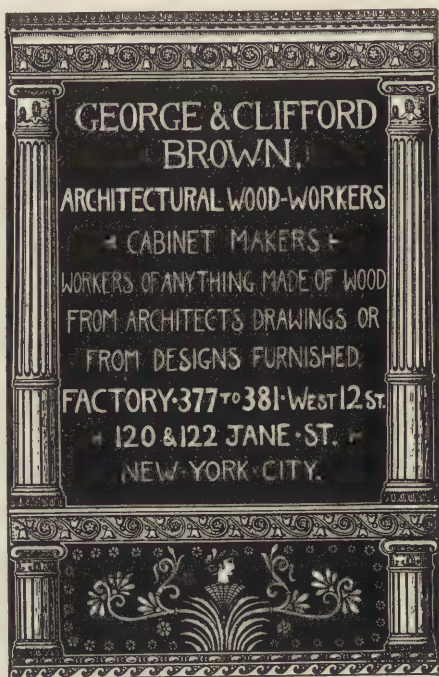
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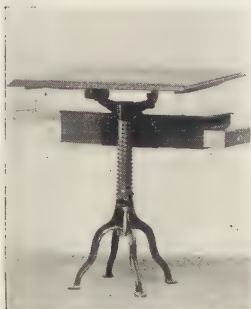
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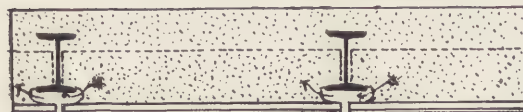
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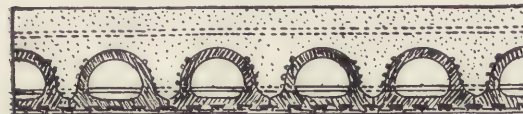
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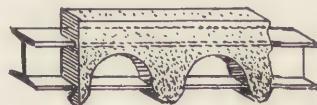
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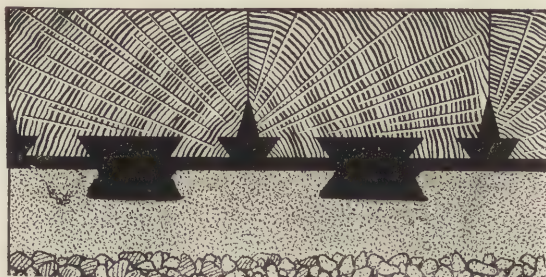
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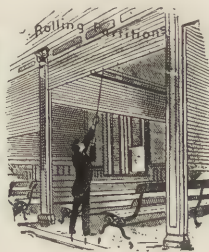
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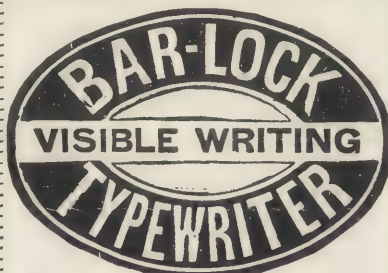
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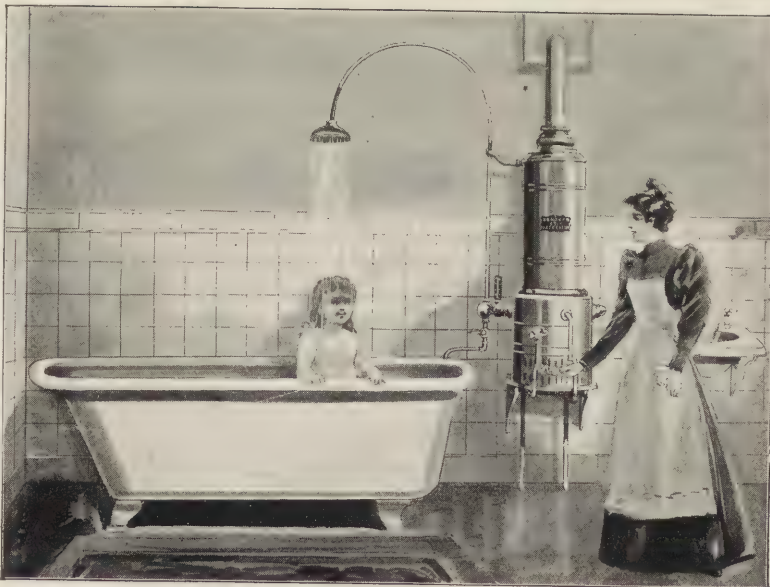
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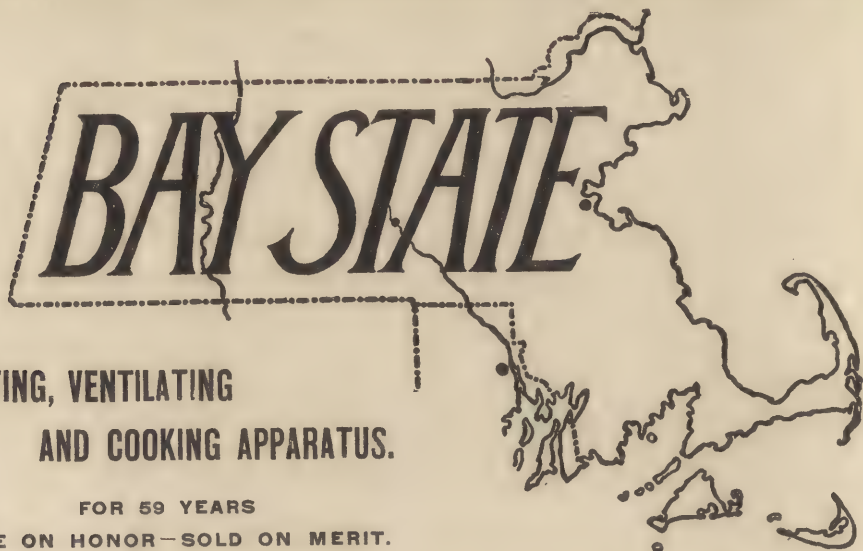
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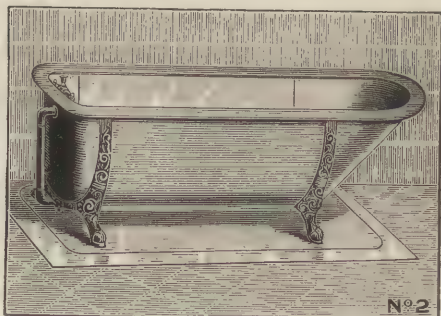
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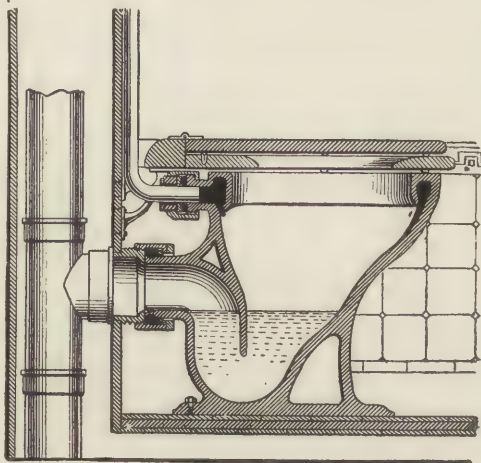
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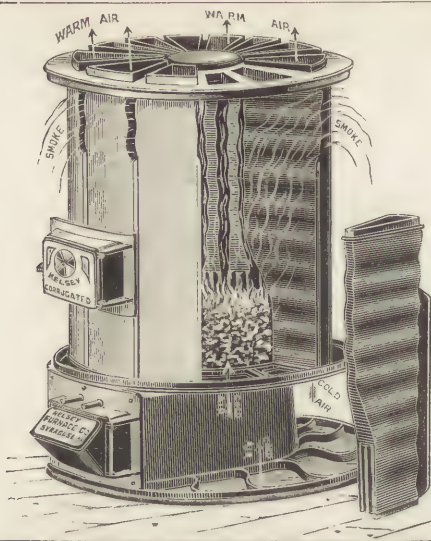
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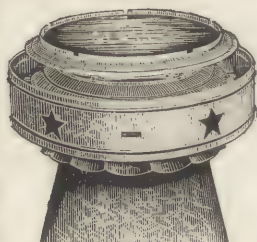
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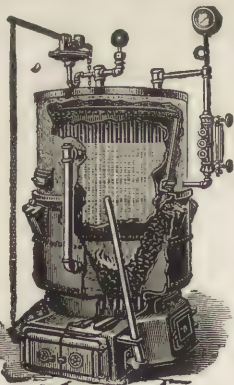
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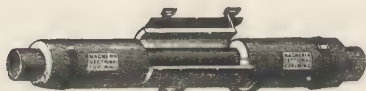
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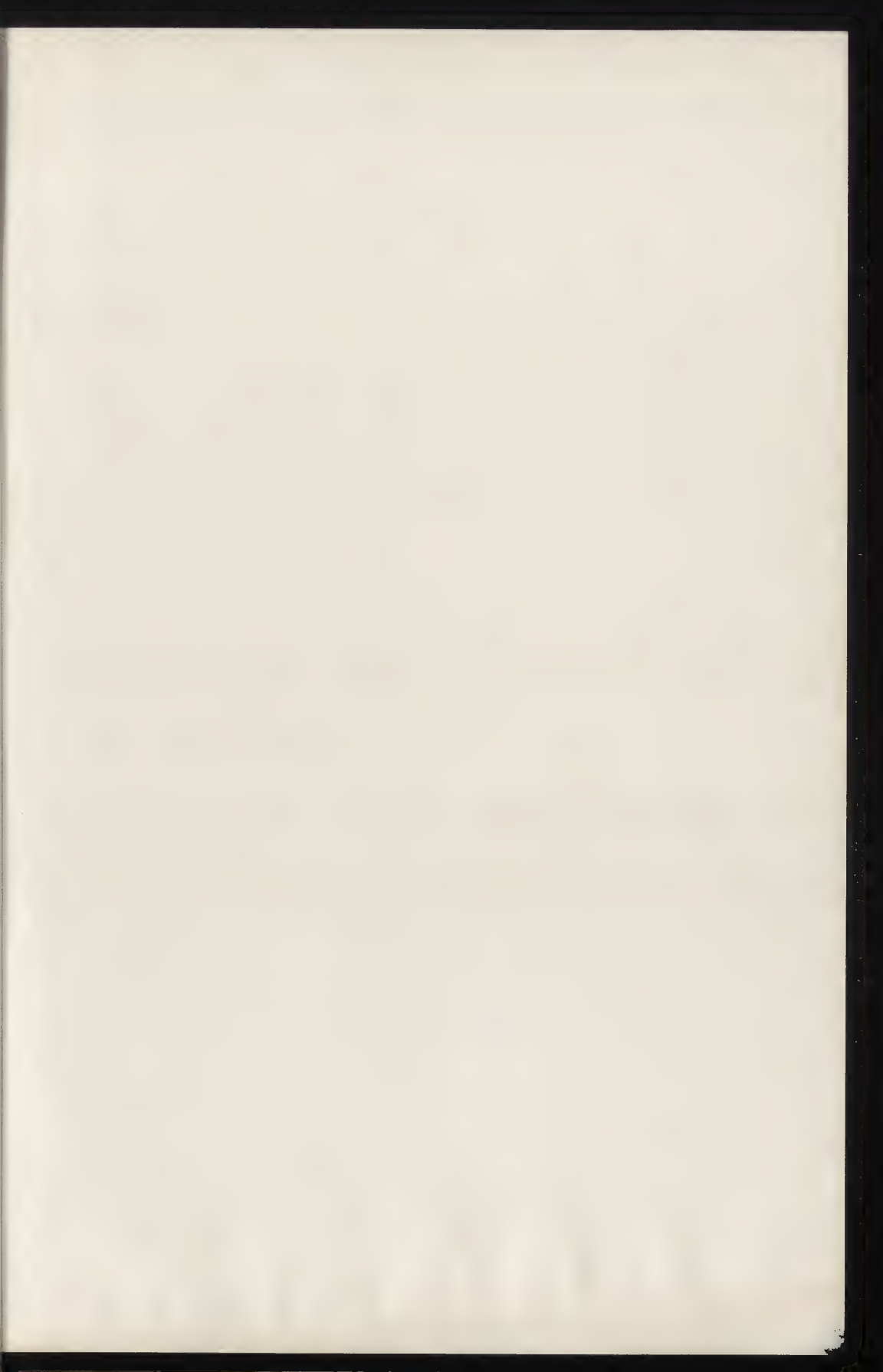
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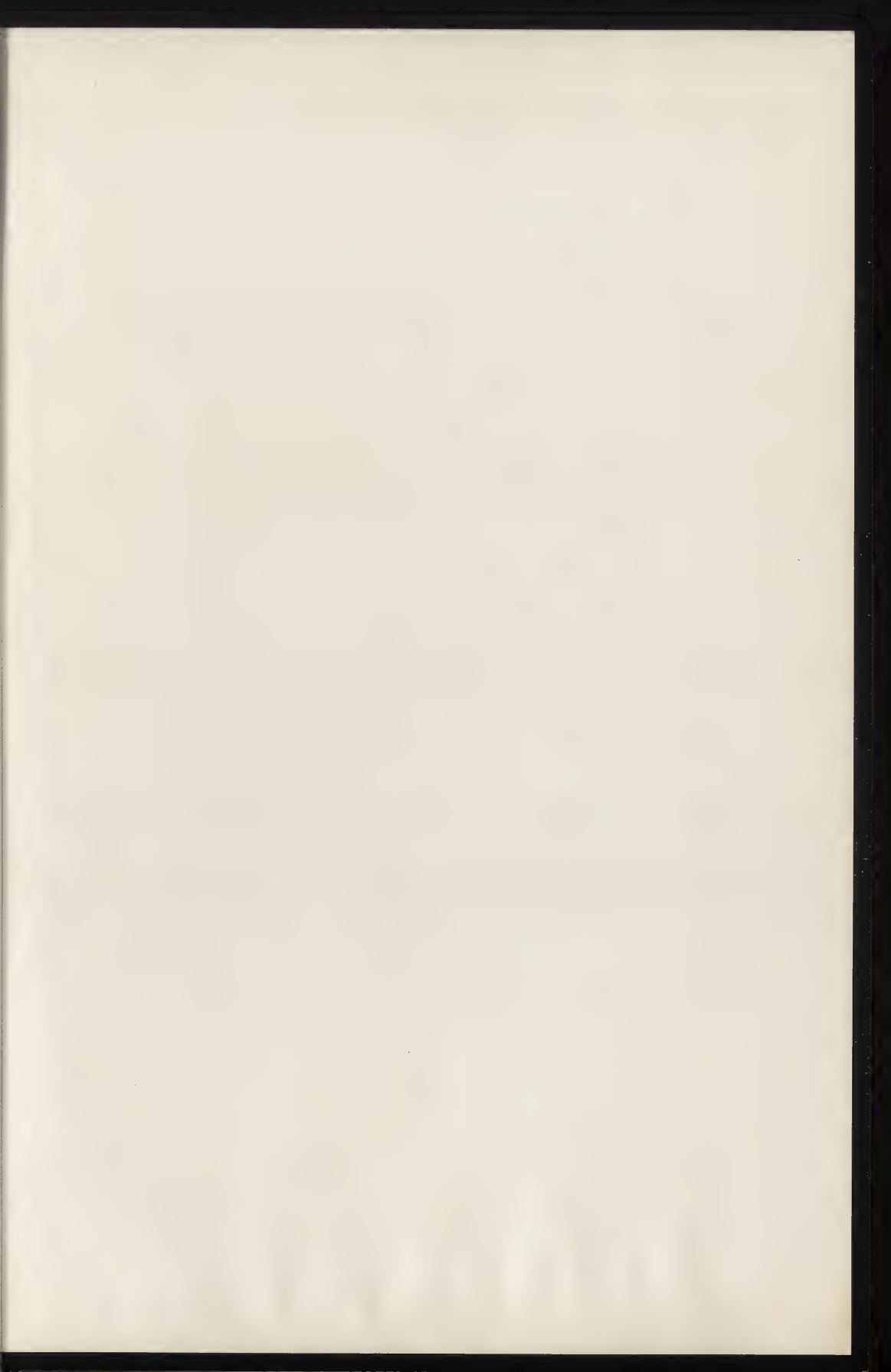
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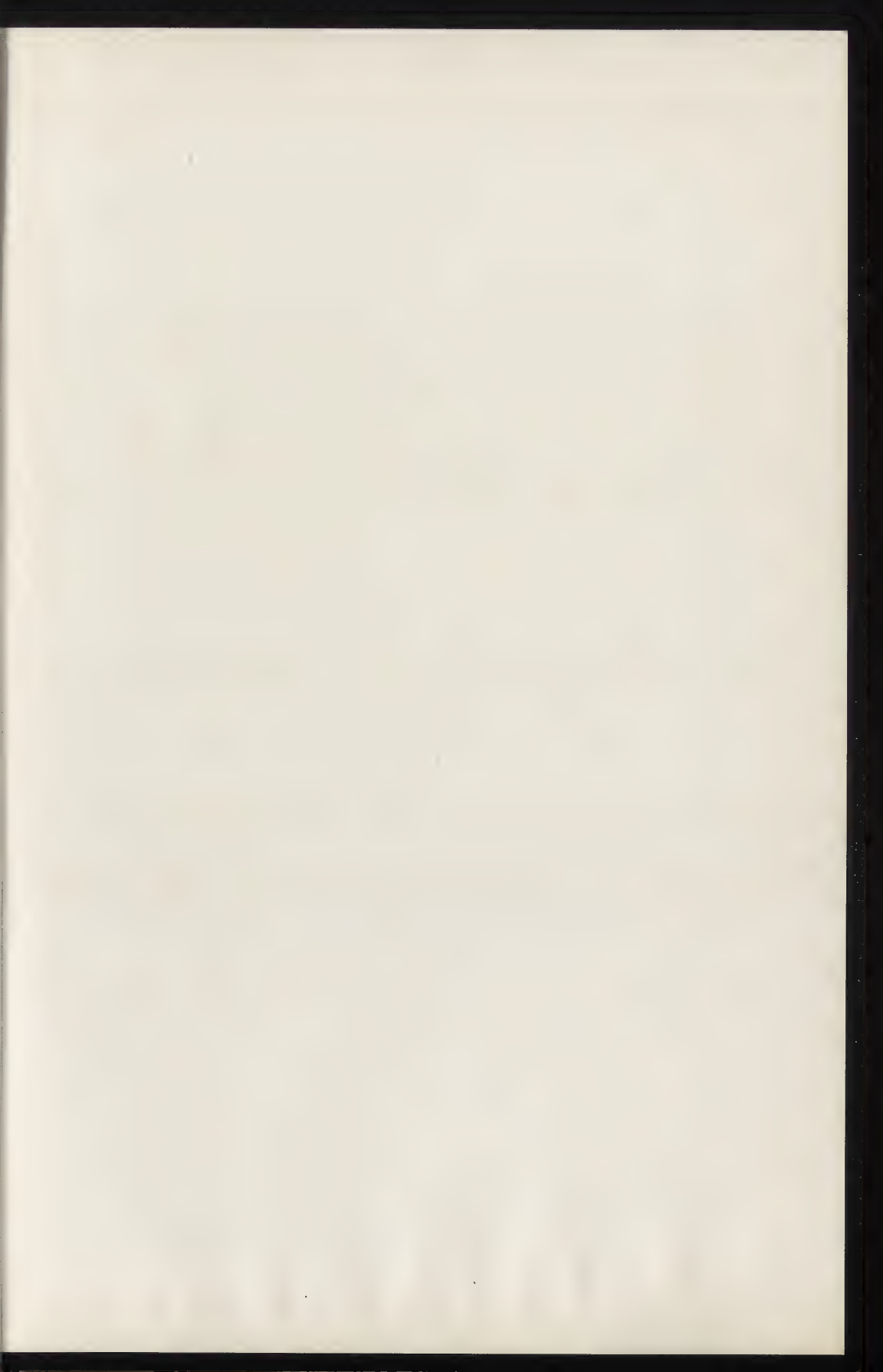
BILTMORE HOUSE — NORTH VIEW.

R. M. Hunt, Architect.



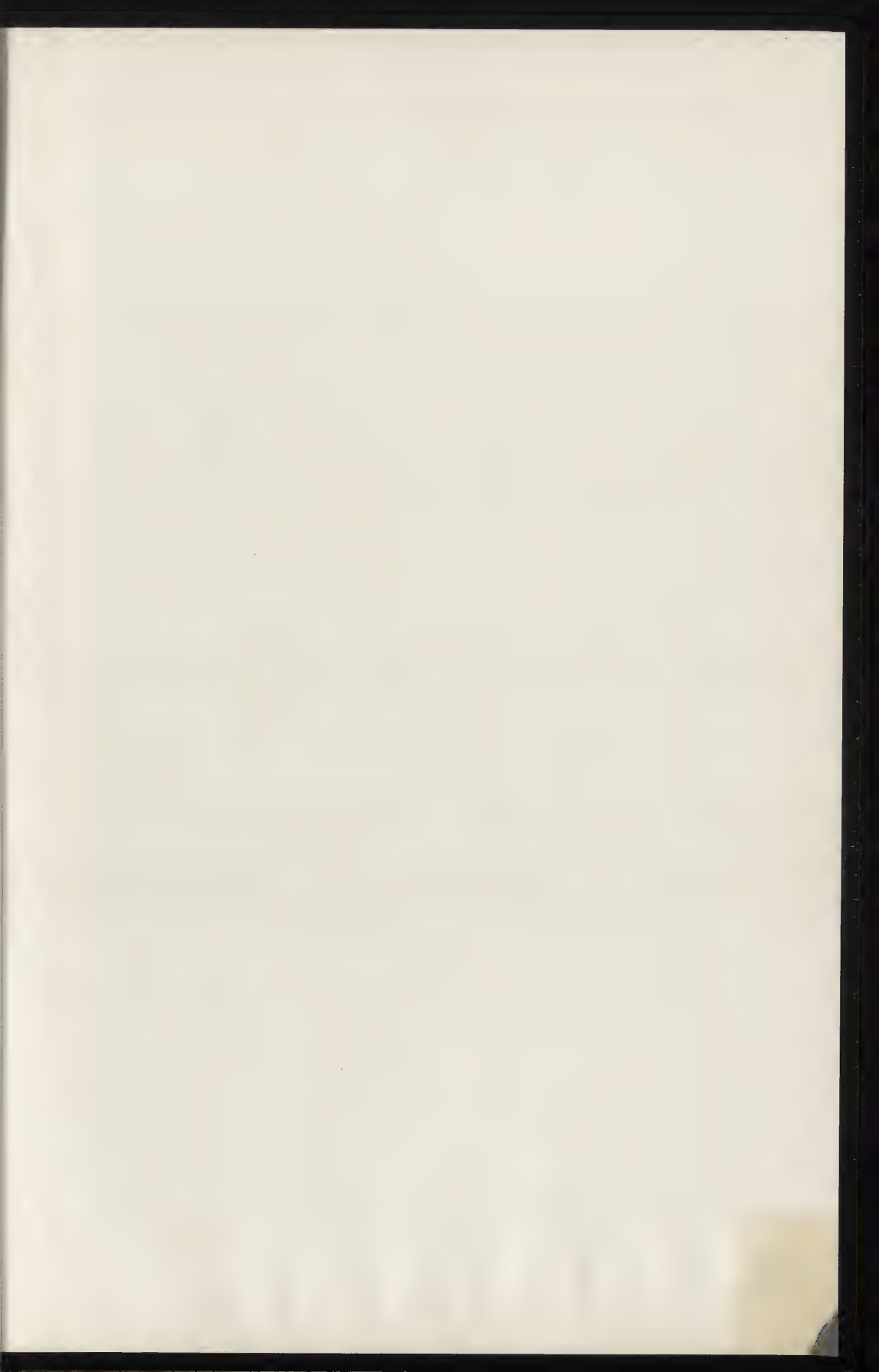


BILTMORE HOUSE — EAST VIEW.



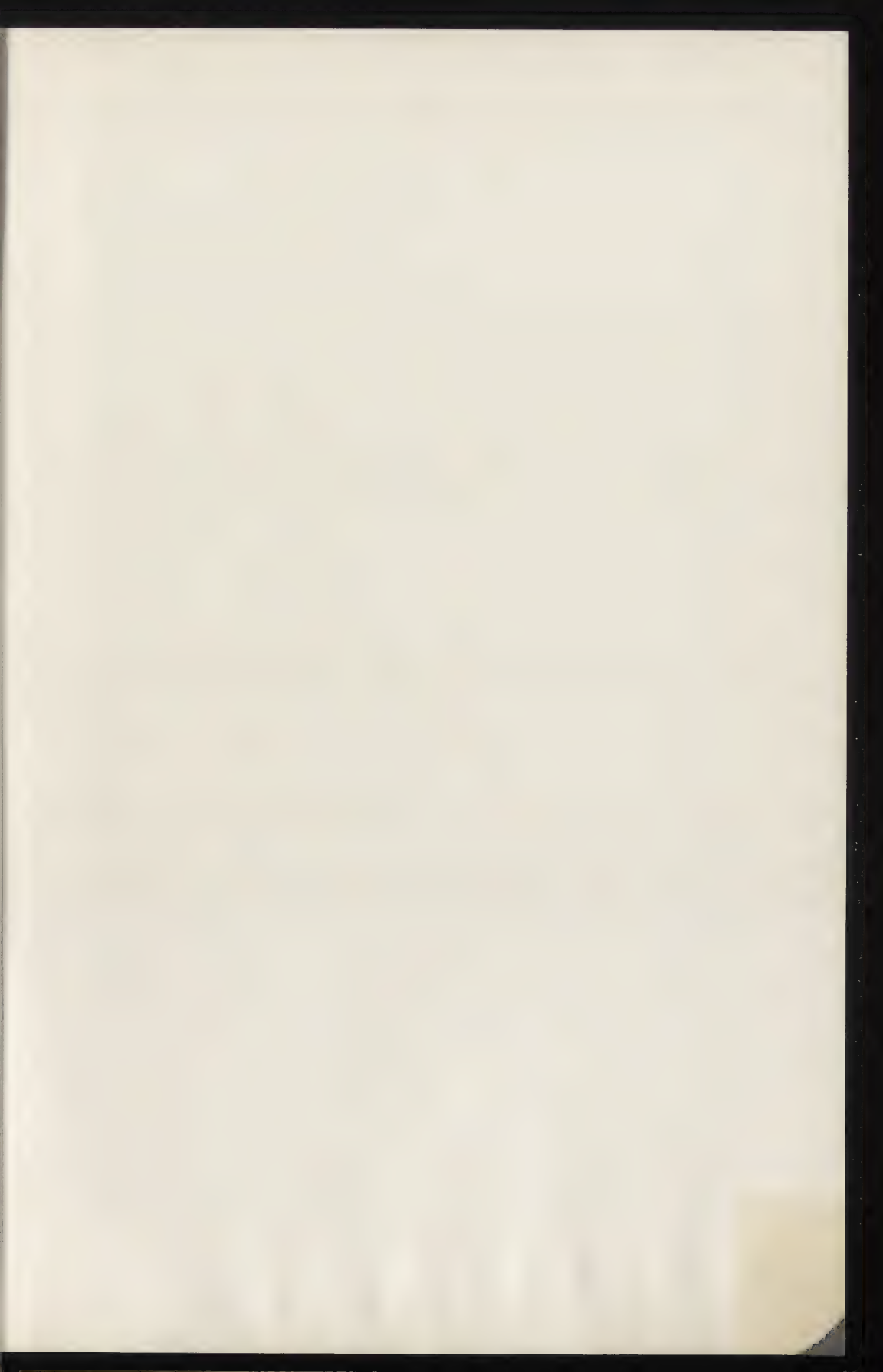


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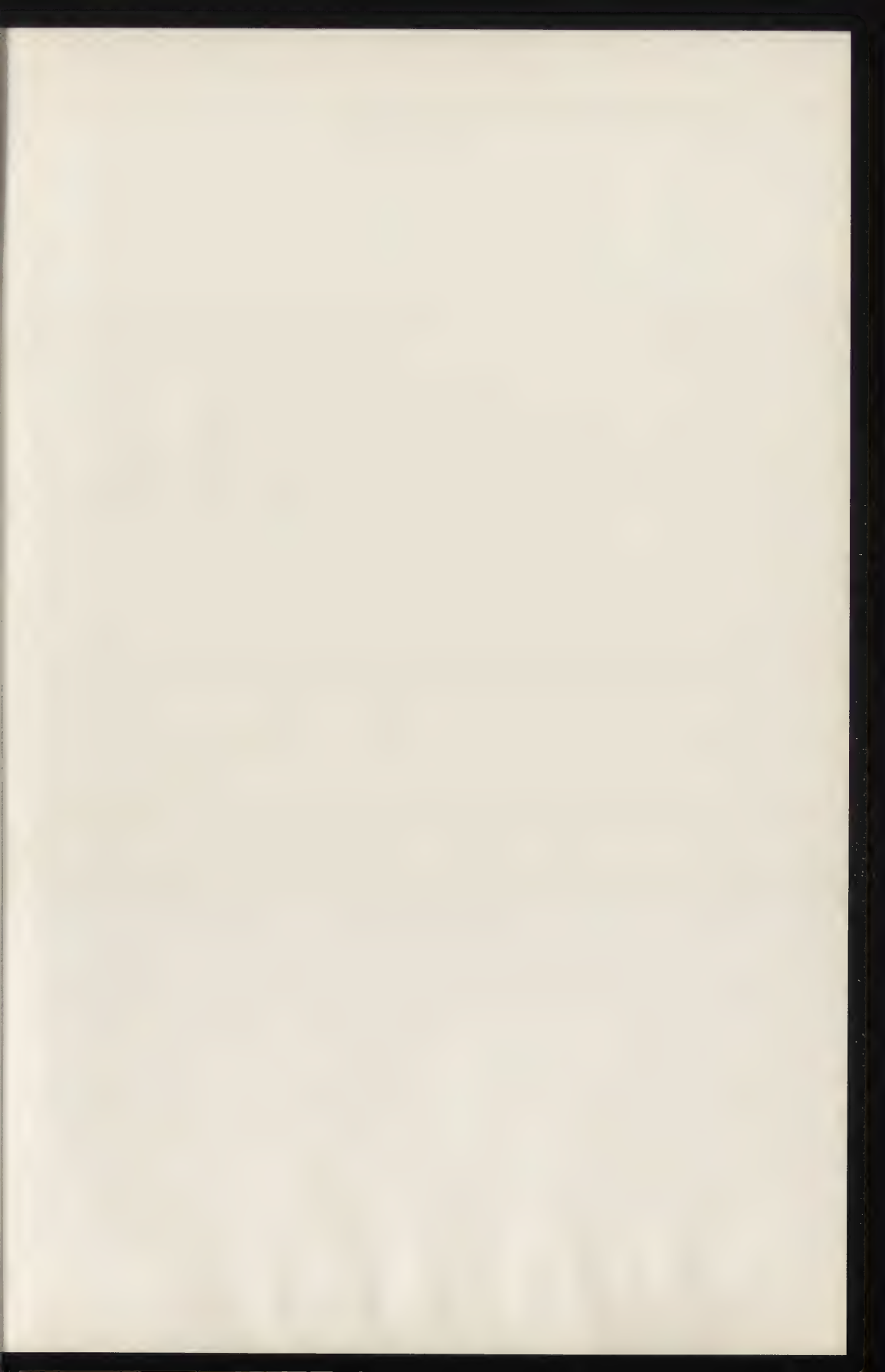


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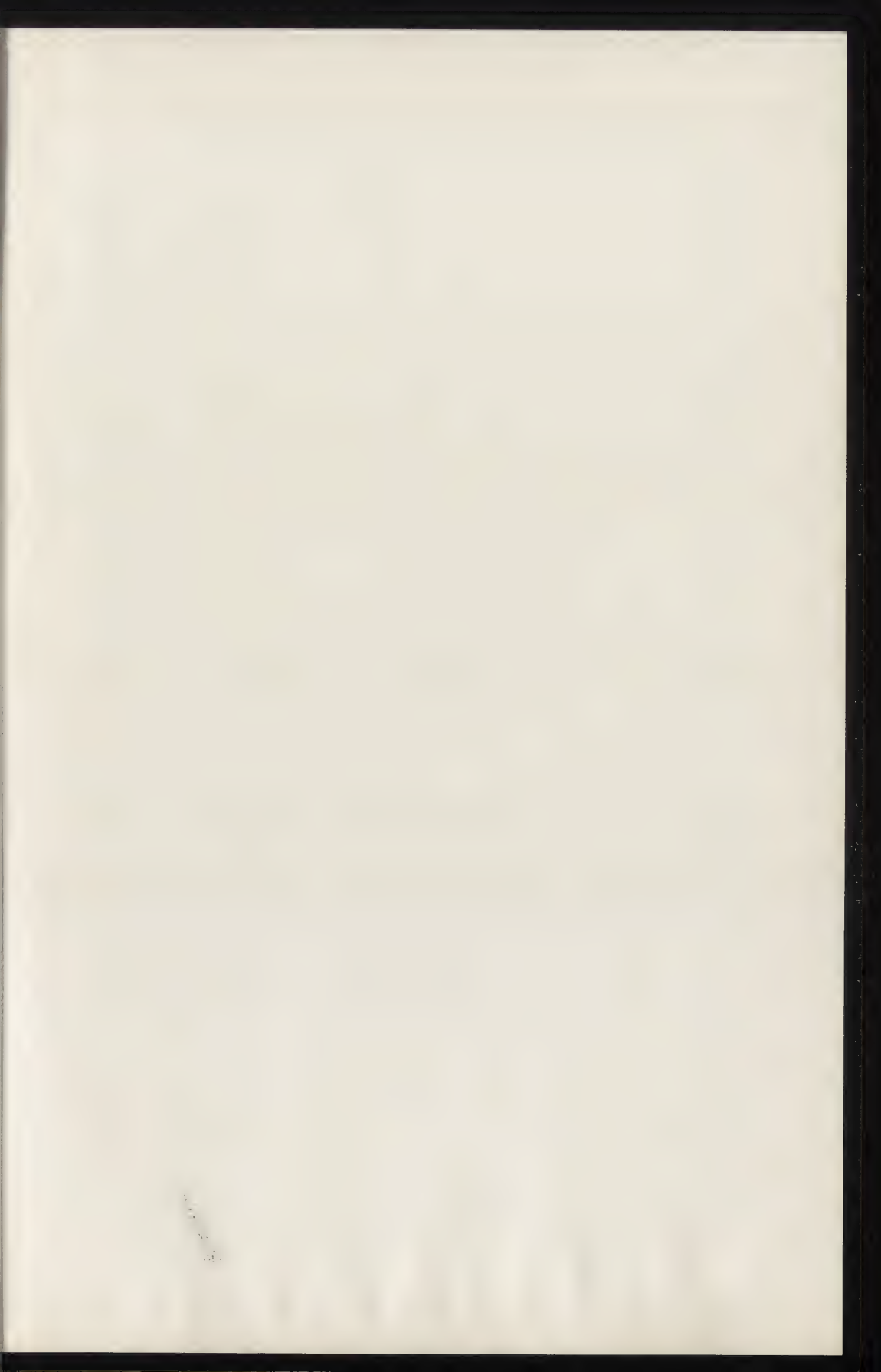


BILTMORE HOUSE — SOUTHEAST VIEW.





BILTMORE HOUSE — SOUTHWEST VIEW.





BILTMORE HOUSE — SOUTH VIEW.





BILTMORE HOUSE — EAST VIEW.

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THE WORKS OF THE LATE RICHARD M. HUNT.

A REVIEW of the career, extending now over forty years, of one of the most conspicuous and distinguished American architects ought to be instructive in more than one respect. It is to a considerable extent an exponent of the national development during the period which it covers. It indicates, of course, with some precision the progress of the public appreciation in architecture, for the co-operation of the public is indispensable to a career or even a livelihood in the practice of that art.

A poet may be neglected in his lifetime to become posthumously popular. A painter, if he have the means of living, may produce works unintelligible to his contemporaries that will be eagerly sought after his death. A musician may devote his life to the production of works which he himself never has the opportunity of hearing, but which may be brought to light and presented for the first time, like so many of Sebastian Bach's, after he has been for generations in his grave. But an architect cannot even produce without the co-operation of his public, nor can he leave plans, which bear the same relation to his art as a score to the musician's, with any hope that they will be executed after his death, since the actual conditions of any architectural problem are never the ideal conditions of the "project." Undoubtedly the

work of an architect reacts upon the popular appreciation and tends to raise or to degrade the accepted standard. But if it do not appeal at all to popular appreciation, it is unlikely to get itself executed, or if the designer gets one building to do which does not commend itself to his clients or his public, he increases the unlikelihood that he will get another.

This is true of the practice of architecture anywhere. But in this country and for the last forty years the series of a successful architect's works denotes also the great social changes that have taken place in that period in the change in the nature of the problems that come to him for solution, in the steady and rapid increase of the magnitude and costliness of the buildings he is called upon to rear. Compare the New York dwelling of the first class of forty years ago with the like dwelling of to-day. The bourgeois mansion has expanded to a palace. With this expansion Mr. Hunt has had as much to do as any other architect. A still more striking example is that of Newport, with the expansion of which he has had so much more to do than any other architect. This example is more striking because it is only within the last twenty years that it has been customary for architects to be invoked specially to design New York houses even of the first class. Forty years ago the chances were that the humble and simple-minded million-

aire of the period would live in a ready-made house, and the mansions of millionaires strongly resembled each other. Newport was already forty years ago our show watering place, and even then the millionaire who was contented in town to live as other people lived, and who had to look twice to see whether he was in his own dining-room or his neighbor's, insisted upon having his country house made for him, with some special recognition in its arrangement of his personal needs and habits. The expansion of the Newport cottage of 1855 into the Newport palace of 1895 affords an epitome of the history of the United States for the interval and furnishes matter for the discourse of the social philosopher as well as of the architectural critic.

It was precisely in 1855 that Richard Morris Hunt returned to New York from his professional apprenticeship in Europe and began the career of which we are to consider the progress. Born in Brattleboro, Vermont, October 31, 1827, the son of Jonathan Hunt, M. C., and the younger brother of William Morris Hunt, the painter, he was graduated at the Boston High School in 1843, and the same year, having already chosen his profession, he went to Europe. In 1844 he entered the atelier of Samuel Darier in Geneva, in 1845 that of Hector Lefuel in Paris, and for the ensuing nine years pursued his professional studies at the Beaux Arts, making journeys in Europe, Asia Minor and Egypt. In 1854, his *patron* having been put in charge of the new work on the Louvre, he was appointed inspector, and under Lefuel designed the Pavillon de la Bibliothèque, opposite the Palais Royal.

This professional preparation would even now be unusually long and thorough, and was still more unusual then, when there was scarcely an architect in the United States who had served a regular apprenticeship to his calling. It was to be expected that after so long an apprenticeship the earliest independent essays of the young practitioner should bear very strongly the stamp of the school. One attends a place of artistic instruction to find his handwriting, as the phrase goes, to gain the

power of expressing himself. But at first it is almost inevitable that he should write the penmanship of the school. Especially is this the case when the tradition of the school is so powerful as at Paris, and where the performances of most of its native graduates seem to foreign observers to be so academic as to lack individuality. Indeed, what we are apt to call academic in the case of French architecture is rather the educated expression of a national trait. A main result of French training and French traditions is the discouragement of eccentricity, and necessarily this implies the repression of individuality, unless this happen to be very marked indeed. In the aspect of Paris one is so much more impressed with the high level of general architectural attainment than with the excellence of individual performances that the city seems to have been built by the State rather than by its citizens. When the American graduates of Paris return to take part in the building of their own country it is very apt to seem that their aim, especially in the first essays, is rather to reproduce Paris than to solve American problems. Sometimes one is even inclined to describe their work as the schooling of the Beaux Arts operating *in vacuo*.

The difference between the French and the Anglo-Saxon ideal is visible as soon as one crosses the channel in the difference between the rambling, irregular and picturesque manor-house or farmstead, and the formal, symmetrical and pompous arrangement of the Norman country-house, with its flanking barns and offices. The English country-house, even when it is palatial in scale and cost, seems to disclaim palatial pretensions, while the French country-house, even when it is far below the palatial scale, seems to aim at being "monumental." The difference goes much deeper than the "battle of the styles," which is one manifestation of it, insomuch that the American practitioner applying his French training seems to be engaged in fighting nature. One of the most instructive results of a study of Mr. Hunt's career seems to me to lie in ob-

serving the action and reaction between an intensely American nature and a thoroughly European training, issuing in a complete reconciliation only after many years.

For example, if the young architect had stayed at home and received such training as was to be had in the United States, I make no doubt that he would have been one of the leaders of the Gothic revival. Trinity Church had been finished for ten years when he returned home, and with other churches of its architect had had the effect of turning the minds of aspiring native architects to the possibilities of Gothic. Whatever architectural life there was in the country took this direction. Indeed, there was little, for architecture was never at a lower ebb in any country than it was in the United States at the middle of the century. The decent colonial tradition had died out altogether, the Greek revival which had produced many public buildings in the towns, and had dotted the country with villas in wooden reproduction of temples had spent its force, and the ignorant and emancipated carpenter was doing terrible things throughout the land, being unfortunately aided in his nefarious work by the facilities afforded by the introduction of the jig-saw for the cheap multiplication of such ornament as it seemed good to him to invent or to "adapt." There never has been a time when the services of educated designers were more needed or when the public, debauched as it was by the vagaries of ignorant designers, was less prepared to appreciate their work. As has been said, the only organized protest had been made and was making by the small body of designers, native or imported, who reflected the English taste, and who were doing something in ecclesiastical architecture, at least, to improve the current and lawless modes of building; and they were endeavoring to establish a new tradition in an art which had lost all its traditions. With them every newcomer would naturally associate himself unless he was already under the influence of a more powerful tradition, as was the case with a graduate of the Beaux Arts.

The first town-house designed by Mr. Hunt must have been a surprise to the New York of that time. It was the Rossiter house in West Thirty-eighth street, since demolished but happily surviving in photography. It is not only an unmistakable product of the Beaux Arts, but it is specifically inspired by Lefuel's work on the Louvre, as witness the banded shafts and the carved pediment that crowns the centre. The absolute symmetry decreed at Paris is maintained, it will be observed, even to the construction at the flank opposite the entrance of an architectural counterpart of the entrance and to the blind arches that flank the opening of the upper story. For the rest it is an evidently educated performance and as such was calculated to exert a beneficial influence in the prevailing chaos. It will be observed that it did exert such an influence upon its immediate neighbor to the left in which its details are repeated in a simplified form by a builder of exemplary docility.

Equally of the Beaux Arts is the Studio building in West Tenth street, erected the next year (1856) after the Rossiter house, and the earliest of its author's works still left standing in New York. It is in humbler material than the dwelling, and of a more strictly utilitarian design. Its interest is rather in planning than in architectural development, and it is so successful in this respect that, in spite of the changes and chances of New York in forty years it is still attractive to the tenants for whom it was built and still occupied as a studio building.

The first of Mr. Hunt's Newport houses is an object, it may fairly be said, of historical interest, for it was the precursor of a long series which for at least twenty years, and until the cottage had expanded itself successively into a villa and a palace, continued to give its architectural character to our most famous watering place. It was the era of the Mansard roof which would have horrified Mansard, and of which the obvious cheapness and convenience and room-saving qualities commended it to the American builder, who addicted himself passionately to



West 38th street, New York City.

ROSSITER RESIDENCE.

it, without regard to the fact that in the form which it took in his hands it was architecturally the most intractable form of house-covering that was ever devised. Our vernacular construction was, as it always has been since the saw-mill displaced the log cabin, a construction of scantling and clapboards, the clapboards enveloping

and concealing the studding that formed the real construction. The *projets* of the Beaux Arts do not concern themselves with clapboards, and the young architect trying to compose architectural objects in the vernacular found himself thrown, much more than in city houses of masonry, upon his own resources, though it is evident that his

sojourn in Switzerland, a land of architectural carpentry, had been of great advantage to him. He shirked neither the clapboard sheathing, nor even the Mansard roof, though his design by revealing or suggesting the real structure took away the impression of a wall of clapboards, which the vernacular carpenter gave, and rendered even the Yankee Mansard roof comparatively innocuous. It can scarcely be said that he succeeded in attaining an architectural composition, for the

known as the Travers, is more successful in general composition, possibly because it is less extensive and complicated, certainly because it has a clearly dominant feature, in spite of the fact that an unmitigated Mansard is here much more than a detail. An avowed reproduction of the Swiss chalet in the vernacular clapboard, done at about the same time, may complete our record of Mr. Hunt's contributions to the Newport of before the war, though it by no means exhausts the list.



Newport, R. I.

RESIDENCE OF J. N. A. GRISWOLD, ESQ.

house, an unusually extensive Newport cottage for that period, lacks unity and tends to straggle. The successes are successes of detail, and many of the details are interesting and suggestive, while at least one feature, the carriage porch, is a spirited and admirable piece of design, in which the treatment of the material is as idiomatic as it is artistic and in which even the emergence of the Mansard roof contributes to the success of a successful and piquant composition. Another example of what is already "Old Newport," the cottage

For these earlier essays no great architectural importance can now be claimed, though they were not without considerable results in their day in bringing about a more intelligent and artistic treatment of the vernacular construction in country houses than would otherwise have been obtained. A more direct utilization of his professional studies was made by the young architect in the preparation of the designs for the four southern entrances to the Central Park, adopted in 1860 by the Park Department, but never begun



Newport, R. I. CARRIAGE PORCH, RESIDENCE OF J. N. A. GRISWOLD, ESQ.



Boston, Mass.

RESIDENCE OF DR. WILLIAMS.

to be executed. The transformation of West Fifty-ninth street has perhaps rendered obsolete the designs for the intermediate entrances at Sixth and Seventh avenues, which would lose their impressiveness by losing their scale when confronted with the towering apartment houses that now line the southern side of that thoroughfare. But it is otherwise with the treatment proposed thirty-five years ago for the terminal plazas. An inspection of these makes it evident that they were very

carefully thought out from the practical as well as from the picturesque point of view. Nothing that has since been done, either in the treatment of the park itself or of its bordering buildings, tends to render them obsolete or inapplicable. As compared with the triumphal arch, which it has lately been proposed to put into competition with the huge hotels that have sprung up about the foot of the park, the designs of 1860 vindicate themselves as appropriate and decorative entrances to a public pleas-

ure ground, and carry out the suggestion of a *rus in urbe*. Indeed, in studying them, we experience a sensible disappointment that they should not have been executed.

The years of the war Mr. Hunt spent largely in Europe and intermitted in some degree his professional activity. Towards 1870 the work began by which he is best known, and it was straightway seen that in urban architecture he had evolved a new and highly individual style, of which his earlier works had scarcely betrayed an intimation. It has been said that it seems that men are born classicists or romanticists as they are born with dark or light hair. In every art temperament triumphs at last over training, and it may even be said that the chief use of training is to enable temperament to manifest itself. Certainly in architecture there are not wanting instances of designers who have managed to formalize if not to classicize the romantic styles and of others who have managed to inject a romantic freedom and picturesqueness into the most settled and conventional forms. I have already recorded my own belief that it was only Mr. Hunt's exceptional training that prevented him from being among the pioneers in this country of the Gothic revival. The so-called romantic movement in French architecture appealed to him as a born romanticist, but he arrived at an individual rendering of it. Indeed, it would not be unfair to describe the most characteristic of his works from 1870 to 1880 as a persistent but unsuccessful attempt to avoid Gothic architecture. It was quite feasible to avoid mediæval detail, but the spirit and idea, the composition and grouping distinctly recalled Gothic work in buildings in which not a single Gothic form was suffered to appear. New Yorkers will not be at a loss to recall examples of this period, though perhaps the first announcement of it was made in Boston, in the houses of Mr. Martin Brimmer, and a very startling announcement it seemed to the Boston of 1870 to be. It had those qualities which the Beacon street of that day lacked without missing, and it lacked the conformity to

the traditions of the Common upon which Boston insisted. Cultivated Boston found it sprightly and gay and animated beyond what was becoming to the dwelling of a solid man of Boston. We may own, in fact, that the animation was excessive, and went the length of restlessness in this edifice, and in others of the same period. Two houses of similar treatment in Park avenue left New York comparatively calm, although nothing could be more conventional than the prevailing domestic architecture of New York at that time. These essays in domestic architecture were followed by others in commercial and "institutional" building which had the same qualities of sprightliness, animation, spirit, and vigor, but which were apt to attain them at the cost of repose, and which might fairly be called sensational. Those who have considered them will at least know what I mean when I say that they are composed in a too *staccato* style. Of these is the Divinity School of Yale, at New Haven, a very straightforward piece of design, not without picturesqueness, but entirely unrelated to the conventionalities of collegiate architecture, although, exceptionally, it shows here and there a Gothic detail. Another is the administrative building of the Presbyterian hospital, a vigorously-grouped, picturesquely-outlined and aspiring mass, crowned with a flèche, and also showing here and there a Gothic detail, but of which the predominant expression is Parisian *chic*. The merits of the design, however, are more or less obscured in execution by the color-treatment. Not only is the contrast between the red brick and the white stone glaring, but it is rendered more vivid by the manner in which the stone-work is employed. In the basement there are alternate courses of stone and brick, but in the superstructure the stone is employed in lintels, which are slightly peaked at the centre, in quoins which are placed under these corbelwise and in similar quoins at the bases of the openings. This disposition necessarily gives to the front to which it is applied a confused and "spotty" aspect which is unfavorable to repose, and which the vigor of the detail and



PRESBYTERIAN HOSPITAL.

East 70th and 71st streets, New York City.

the undeniable spirit and success of the composition do not succeed in redeeming. Indeed the color-treatment, which is a detail in the design, is so much more than a detail in the execution that the design is more readily apprehended from the photograph than from the building, so that it seems safe to say that had the design been executed in monochrome the building would have been more successful.

It seems safe also to pass a similar judgment on the *Tribune* building. When we consider that it was the first of the elevator buildings, that it was literally unprecedented, and an initial attack upon a problem at which a whole generation of designers have been working for the twenty intervening years, it is clear that every needful allowance must be made for its shortcomings. Indeed, the allowances that need to be made are surprisingly few, and perhaps the chief drawback to the success of the completed work is what was merely a detail in the design, and that is again the employment of color. The contrast between the granite and the brick is so

vivid, and the granite is so applied in patches rather than in accentuation of the main lines and features of construction as in a great degree to obscure the design, alike in the photograph and in the fact, and to concentrate attention upon what in the design is a very minor matter. To appreciate this it is necessary only to compare the basement, which is a monochrome of granite, and the colonnaded seventh story, which is distinctly bounded by the continuous cornice and the continuous sill-course in granite with the intervening stories to note the superiority of these features in coherency and unity. The design, however, remains very interesting. It was generally assumed by educated architects who had elevator-buildings to do in the early days of elevator-buildings, that it was necessary to employ in these towering structures a unit of design made up of several stories to supply the place in the composition of the single story of a lower building. The analogy that is now commonly accepted of a column, in which the midmost division, the shaft,



New York City.

TRIBUNE BUILDING.

is much the tallest, and may and should be made continuous by identity of treatment of its parts is a comparatively recent discovery. In the early efforts the grouping of stories into an architectural story was managed, sometimes by merely extending the openings, and making the floor-lines appear as transoms, as in the Equitable, sometimes by constructing main divisions, marked by arches or orders. It has seldom been done more rationally than in the *Tribune* building, where the segmental arches turned between the main piers, and including three stories are not without structural significance, while they neither dissemble nor belittle the actual division into stories nor the separateness of these. The basement is admirably simple and massive; the roof-stage with the very lofty dormers suitable to and required by the special uses of the building, forms with the tower a picturesque crowning feature, and the earliest of the elevator buildings remains one of the most interesting and suggestive, even though it be true that the combination of its materials interferes with one's appreciation of the design, and that a tamer and less varied treatment of the main wall would have enhanced its effectiveness.

This seems to have been, on reflection, the opinion of the architect, for in a later and more successful work, the most successful, it seems to me, of Mr. Hunt's commercial buildings, the treatment is modified accordingly. This is the Guernsey building, in lower Broadway. In this neither the difficulty nor the opportunity was so great. On the one hand the building is but of seven stories, and it is well known that the difficulties of an elevator building increase with the addition of every story after the original five. On the other it does not occupy a detached site, but is a mere street front. Here the unit of design is the story and not a multiple or combination of stories. The composition is simplicity itself. A basement of two stories in stone, with an entrance on one side prolonged through the two, supports a superstructure of five in brick and stone, of which the upper is set off by a cor-

belled string course as an attic while the four intermediate are identically treated, and each is emphatically marked by a projecting course. The bay allotted to the entrance is distinguished throughout in treatment and above the fourth story the wall of it is slightly projected so as to account for a separate and towerlike roof, while the attic is lightened and enriched. There is no lack of animation in the design, but there is also no lack of repose. The detail is vigorous and telling without excess in quantity or scale.

The Coal and Iron Exchange in Cortlandt street, between the *Tribune* building and the Guernsey building in date, is more successful than the former, even though less interesting, and both less successful and less interesting than the latter. Success, however, was an easier attainment here than in either of the other cases. The building has two sides free, though since its erection the shorter has been obscured by the structure of the elevated railroad, and though it was built after the elevator had been introduced it is not an elevator building. The frontage is of the ample breadth of 125 feet and of the not immoderate height of six stories, including a Mansard. Both the vertical and the horizontal divisions are well marked. The former begins with a battering basement of Dorchester stone, which material is used throughout in conjunction with red brick and affords to it a contrast that is effective without being violent. The batter is a questionable feature, so questionable that it has not since been reproduced under conditions at all similar either by its own architect or by any other. This basement counts in with the story above as a member of the composition, in spite of the difference of material, the two being set off from the next division above by an emphatic string course, and furthermore united at the centre by the entrance, which is the chief decorative feature of the front. To give an entrance importance by extending it through two stories, the actual entrance being in the lower, is a common enough device. It has rarely been managed with more discretion and success than in this instance, where



Broadway, New York City.

GUERNSEY OFFICE BUILDING.

it is very plainly given to be seen that the second stage of it is a mere decoration, both by the heavy transom which crosses the actual entrance and by the detachment from the wall of the two corbelled columns above that signalize the entrance, and of the arch of three large voussoirs that connects them. The next stage is of two stories included under tall segmental openings with heavy springers of stone, sharply separated from the lintelled story above, which in turn is separated from the roof-story by the main cornice. The lateral division is fivefold, for which the frontage gave ample room, consisting of a central pavilion, corresponding to the entrance, covered with a triple dormer, terminal pavilions, and curtain walls between, the differences in treatment being slight but quite sufficient to mark the division. The detail is still unmistakably neo-grec, but it is by no means so insistent as in the architect's earlier works in the same kind, as in the Brimmer houses, in the buildings for the Divinity School at New Haven, in the Victoria Hotel, or in the Presbyterian Hospital. Not all of these, indeed, can be classified as neo-grec at all, though they all bear unmistakably the same impress, and are in the same manner, whatever difference of detail a minute examination may reveal. The detail here is, if I may say so, less sudden; it is more crisp and effective. The defect of the Coal and Iron Exchange seems to me, nevertheless, to be clearly a defect of the style, a certain heaviness and starkness which comes from the effort to substitute mere surface-decoration by incised lines in reproduction of admired lines of classic forms for actual modification of form by means of moulding. This defect does not efface the merits of the building, nor prevent it from being a sober, dignified and impressive performance.

I have refrained thus far from speaking of the neo-grec, in which so many of the works of this period were composed, domestic, institutional or commercial, because, whatever the value of the neo-grec, it is clear that Mr. Hunt arrived at an individual render-

ing of it, and it is the individual quality that I have been trying to detach. But it is not possible to treat the work of an architect so academic in his ways of considering his problems without some reference to the styles in which they are severally designed. Mr. Hunt, except in works which seemed to him ephemeral and occasional, mere *jeux d'esprit*, has always "worked in styles," has commonly abjured such eclecticism as had not already been formulated, and has manifested his own individuality, after the choice of the style which seemed to him to suit best the special problem presented to him, within the limits of that style. Neo-grec was not only, at the time when he finished his studies, a current fashion, but it made much more serious pretensions than that. It professed to offer the reconciliation of the classicism of the schools with the new romantic impulse. It is no wonder that it should have seized with a special force upon the imagination of an American student of architecture in France, and that he should have taken to its practice with enthusiasm. If I am right in what I have said of the contradiction between his temperament and his training, whatever promised a reconciliation must have been alluring to him, and would naturally have led him to the kind of experimentation which is shown in his work of twenty years ago. That this experimentation was upon the whole unsuccessful in its ultimate end of attaining a new and comprehensive style may be inferred, in general, from the fact that neo-grec is no longer practiced nor discussed in the land of its origin, and has there been relegated to the category of fashions that have passed. It seems to me that the reason of this is the perception of failure that comes from actual and systematic attempts to unite forms of detail that are admired by all the world, either in their fullness or in their lines, with modes of construction to which they are alien, and which, to become styles of architecture, must grow their own detail. In our particular instance the confession may be inferred from the fact that it is nearly twenty years since Mr. Hunt abandoned absolutely the style

in which for ten years or more he had wrought so much, and betook himself, in his later and his far more successful work, to another transitional style in which the complete fusion of diverse elements was neither attained nor even attempted. But if his works in the neo-grec cannot be admitted to be successful in their ultimate aim, they show so much of individuality, of invention and of life as to be incidentally and intrinsically extremely interesting; and it would not only be preposterous, but it would be doing their author's powers a serious injustice not to consider and to illustrate fully by the most characteristic examples a phase in his career which is in itself so characteristic.

In considering the commercial buildings we ought not to forget two experiments in iron-work. In his metallic detail Mr. Hunt is almost always successful, as witness the elaborate grill illustrated at the end of this article and the characteristic and effective treatment of metal in the openings of the Hotel Victoria. But an iron store front is another matter, and many of the architects of twenty years ago were condemned for their sins to try their hands at iron store fronts. The architectural iron works used to have façades on hand of any style you wanted, only they were of no style that the judicious wanted, being only imitations of masonry. The architects, when they were appealed to, made various kinds of struggles to respect the material. Among these efforts none were more interesting than the two fronts erected on the east side of middle Broadway from Mr. Hunt's designs about twenty years ago. Each had the fundamental merit of being unmistakably designed for its material. The first was a series of openings three high and three wide, each of the two lower containing two stories, and the upper an attic of a single story with a strongly projecting coved cornice. The uprights are decorated with columns, very much more slender than classic proportions would permit, connected by light segmental arches filled with tracery. It is this building which Professor Kerr has done the honor of choosing as a most fa-

vorable example of the iron store front, for his continuation of Fergusson, and of it he remarks that the architect has "produced a composition which is decidedly unobjectionable and not in-artistic." In the other the designer has employed Moorish motives, and especially the horse-shoe arch, as congruous with the nature of the material, and indeed the arches here, with their hanging cusps, promote the impression the whole front makes of being unmistakably metallic, and excluding any other material than metal. Moreover, the radical weakness of the material as a material for permanent structures, its liability to rust, is here taken account of, and in each case the painting which an iron front needs for its preservation is made an important element in the decoration. The "iron age" in commercial building produced nothing better than these two fronts and very few things so good. But, like the other comparative successes they indicated that the problem was not really soluble. It is a matter of congratulation upon architectural grounds that at about the time when these fronts were done, experimentation in iron fronts should have been brought to an end by the demonstration of the fires of Chicago and Boston that fronts of unprotected iron-work were not practically trustworthy, and architects were thus released from the attempt to solve the insoluble.

As it fell to Mr. Hunt to design the first elevator building for commercial uses—or one of the first, for the *Tribune* building and the Western Union building were contemporaries—so it fell to him to design the first of the elevator apartment houses, the Stuyvesant in East Eighteenth street. For some time apartment houses of a higher grade than the tenement house had been coming in, but they were planned and designed by their builders without much real consideration of their requirements and without any knowledge of what had been done elsewhere, and the stairs were the only means of access to the upper floors contemplated by their builders. The Stuyvesant was planned with reference to its purpose and to the new facilities of ascension,

and so successfully planned that it is still occupied by tenants of the same class for which it was built. It was a modest essay, being but four stories of apartments, surmounted by a very tall roof-story of studios. Architecturally it remains one of the best of the apartment houses, the unusual height of the crowning story becoming an effective member of the composition, the detail, more Gothic in effect than the designer commonly permitted himself, is careful and successful, the combination of color effective and the piquancy of the front is gained without loss of unity or repose. The Victoria Hotel, as it is now, originally called an apartment house, is a much more ambitious and developed example of elevator architecture, regular and grandiose in composition, ingenious and clever in detail, especially, as has been intimated, in the detail of iron-work and masonry in the basement, and perhaps the most Parisian in effect of anything of its period or of its author, so Parisian indeed that it is difficult to characterize it without resorting to French and pointing out how it has *chic* and how it has *élan*.

Characteristic as all these things are they represent but one phase of the artist's work for the decade of 1870-80. He was actively employed in country houses, and the Newport house was already undergoing an expansion from a cottage properly so-called, not indeed into the palace which is the latest phase of its evolution, but at least into a villa. Of this type of country house, which is no longer a mere summer-place, but is apparently available for residence all the year round, there is no better example than the Newport house of Mr. Marquand, which has freedom and animation, and yet is chastened into unity and repose in spite of its comparatively complicated disposition and its variety of material, the stories being successively of rubble, brick-work and wood. The treatment of these materials is so straightforward and idiomatic, and the disposition of the fronts so successfully overruled into a composition, that the house bears no mark of any passing fashion, and by no means dates itself so accurately as

most of its contemporaries. It is entitled to the rare praise that being of no style it yet has style, and it is a sober and at the same time a vigorous and individual piece of work.

Two of the simpler and older-fashioned Newport cottages of about this same date, early in the seventh decade, are very well worth notice, that built for Colonel Waring and that built for Mr. Appleton. The former is as unpretentious and as successful as possible, and remains almost a model in its kind of a sea-side cottage. The mansard here, treated as the lower and steeper slope of a gambrel roof, becomes not merely inoffensive, but very positively attractive, while the introduction and the treatment of the central gable leaves for its purpose nothing to be desired. It supplies a dominating feature to the composition, and imparts quite sufficient variety without at all disturbing the easy and homely appearance which is the charm of the dwelling. The Doric porch, of which the detail is now hidden by vines, becomes all the more quaint and amusing by its very academic incongruity with the timbered gable over it.

The other cottage is of a quite different aspect. It is more sprightly, more fantastic, less homely, less easy, more evidently intended as a summer resort and less eligible as a home. It is more consciously clever, and in revenge it does not give the same sense of repose. But about the cleverness there can be no doubt. The fronts are composed, each by itself, and they are well united. The gay and fantastic aspect given to it by the multiplicity of forms and features is enhanced by the multiplicity of materials. The ground story is of rubble-stone, the upper is covered with slate laid in colored patterns, while the roof is shingled. It dates itself much more accurately than the cottage of Colonel Waring, which might be either much earlier or much later, and to say that is perhaps to say that it is an example of a bygone fashion. But it is successful enough in its own kind to make it worth preserving, not only as a specimen or a relic, but as a piece of cottage-architecture, and no judicious

visitor to the Newport that now is could wish it away.

This leads me to remark upon an unpretentious work in Newport to which its author has very likely not attached any importance, either when he was engaged upon it or since, but which is nevertheless very useful and extremely well worth doing. I mean a row of two-story shops, in brickwork, half-timbered, on one side of the Casino, now counterparted by a row of brick shops on the other side. Newport is almost the only exception to the rule that our watering-places are vulgarized by their shopping streets, and that the flimsiness and contemptibleness of the commercial building go far to nullify whatever expression of refinement and art the cottages may impart to the place. For this reason, these shops in Newport, though merely decorous and appropriate, are highly exemplary.

In some of the architect's city dwellings of this period the designer seems to have put a strong constraint upon himself to repress the exuberance with which those we have already mentioned may fairly be charged, and to have aimed at a conventional decorum, which has been attained, but only at some sacrifice of animation, and indeed of individuality. Nobody would suppose, for example, that the houses built for Dr. Williams, in Boston, had the same authorship with the houses of Mr. Martin Brimmer, or the houses built for Mr. Bronson in Madison avenue with the earlier houses in Park avenue. Of the former houses indeed the passer would scarcely be moved to inquire the name of the architect, so respectable and unremarkable they are. The latter are more positive, and are indeed quite typical expressions of a "*comfortable bourgeoisie*" in domestic architecture which so often expresses qualities much less eligible.

The Lenox Library is almost alone among Mr. Hunt's buildings of this period in presenting a solution of an important architectural problem, which is at once academic and individual, and which combines animation with dignity. It is very simple in composition, and it is in monochrome; it evinces no straining for novelty or for effect, and yet it

has a distinct physiognomy of its own. Its massiveness is in fact very unusual in our building, and it is so artistically accentuated as to seem even more unusual. The relation of the solid wings to the more open recessed centre is very happy, and so is the treatment both of wings and centre, the single opening at the centre in each story of the wings, the relation of these openings to the flanking walls and to each other, enhanced by emphatic exhibition of the masonic structure and of the thickness of the walls. The centre is equally felicitous in the adjustment of its three stages, the solid basement with the lofty entrance, the triple arcade above, and the crowning attic with its pairs of openings. The net result of the designer's dispositions is to give the building an impression of "scale," in which it was almost alone in New York or in the country at the time of its erection, and has had very few successful rivals since; the sense of largeness and liberality, without which monumental dignity is out of the question. Doubtless the architect was fortunate in his problem and his client, but we have seen equal opportunities frittered away too often not to offer him very cordial congratulations upon seizing his opportunity and making the very utmost use of it, inasmuch that he has produced perhaps the most monumental public building in New York—certainly one of the chief ornaments and architectural possessions of the city.

One building of the early seventies that does not easily fall within classification with respect to its purpose is yet too individual and too characteristic to be passed over. This is the lodge of the Scroll and Key at New Haven, devoted to the celebration of Eleusinian undergraduate mysteries, as one might without much difficulty infer from its architecture. It is, as its purpose required, a study in blank wall, how it is lighted and how it is ventilated being among the mysteries which it proclaims. How it is even entered is left as much to the imagination as could be done without the provision of a tunnel, at the remote other end of which the initiate might dive into a manhole and disap-



New Haven, Conn.

SCROLL AND KEY CLUB.

pear from view. The Moors in Spain devised an architecture of which the exterior was almost exclusively dead-wall, and the Spanish-Moorish naturally furnished the precedent for so much, or rather so little, of decorative detail as the exterior shows, only the columns that bear the stilted arches and the enriched band at the impost. Otherwise, the architecture is but the exposition of the structure of a cube of masonry, a very clear exposition by reason of the application of strengthening piers, and the emphasis given the bonding by the use of narrow alternate courses of a darker tint than that of

the wall field. These devices give a very satisfactory assurance of stability. For the rest, the design imparts to the building a certain comic air of "advertising mystery and inviting speculation" that is intensely appropriate.

Of purely monumental work, that is to say of erections which serve no utilitarian purpose, but are intended to preserve the memories of men or of events, I suppose Mr. Hunt has had at least as much to do as any other American architect. "Monumental work," in the marble-cutter's sense of mortuary architecture, is of course only a part of this, but in this limited

sense also he has done his full share of it. It will not be disputed that here at least the training of the schools is an unmixed advantage. The crowd of precedents with which his schooling supplies the student may positively encumber him when he is engaged upon buildings that are to serve actual physical needs. It is not difficult to recall instances in which the architect's memory has embarrassed his invention by supplying him with a less eligible solution of his problem than he might have attained if he had remembered less and thought more. The motive in works of utility is supplied by the need. In purely monumental work there is no physical basis of architectural expression. A tomb, indeed, suggests in some degree its own treatment in so far as it is merely a safe and inviolable repository, and to this may be added by the architect the suggestion that it is also a shrine. Of the former class, in Mr. Hunt's work are the Delano and Hoe tombs and the Vanderbilt mausoleum, works carried out upon various scales of magnitude and cost, but in all which the primary notion is that of inviolability. The Delano tomb is a simple but very successful example of this type, an excavation in a hill-side, with a closure and revetement of massive masonry, almost devoid of ornament, owing its effect to the size and disposition of the parts, while the suggestion that it is also a place of pilgrimage is added by the curving seat on either side.

A more ambitious and elaborate work, one of the most noteworthy, indeed, of our architect's achievements in purely monumental design, is the Belmont tomb, a beautiful work and a work so purely classic in spirit as, I confess, to give me pause over the conclusion at which I had arrived, that classic design is with him a result of academic training, and by no means of "the strong propensity of nature." It is not a reproduction, for the precedent for the disposition, to say nothing of the structure, does not exist in classic times. Yet the simplicity, the purity, the tranquillity of the work connote exactly what we mean by classic, and the round arch is introduced into a

design essentially Grecian in spirit as well as in letter, without jar or sense of incongruity. Nothing could well be happier than the disposition or than the detail taken by itself. The defect which estops the work from attaining perfection in its kind is a defect not usual with its author, a defect of scale. A careful inspection will reveal, I think, that the detail is pretty uniformly, excepting the impost mouldings of the arch and the uppermost mouldings of the exedra, too large for the mass, which it thus tends to dwarf and directs attention too much to itself. But in all our essays in that classic design which in proportion to its simplicity is intolerant of imperfection, how many can bear comparison with this?

In monumental work in association with sculpture Mr. Hunt has also been as frequently employed as any other American architect. As a rule the designing of pedestals is as thankless as it is difficult. For the merit of a pedestal is not to be noticeable, to count simply as a part of the statue, and to direct no attention to itself. As soon as one begins to observe it on its own account, he has a right to suspect that it is defective, or, which comes to the same thing, excessive. The designer of pedestals is in the position which Dr. Johnson assigns to the lexicographer—all other artists may aspire to praise, but he can hope only to escape reproach. So it is not desirable to illustrate or to consider in detail the architectural accessories which Mr. Hunt has designed for statues, useful and valuable as a consideration of them may be to designers confronted with similar problems. Among them are the Seventh Regiment monument, the Pilgrim monument and the Dodge monument in New York, this latter an especially good and effective example of the manner in which dignity and detachment may be given to a portrait statue in a street by its architectural accessories; the Beecher monument in Brooklyn and the Garfield monument in Washington.

The pedestal of the Liberty monument in New York Harbor is taken by its colossal scale quite out of the cate-



BELMONT TOMB.

gory we have just been considering. It is impossible to overlook, or to avoid looking at, the huge mass of masonry which serves as a substructure for the huge figure. In this instance not alone the architect, but the untrained observer, must take notice of the pedestal as something more than an accessory of the figure, so great and lofty is the mass required to give to the statue, as was the sculptor's evident intention, the same dominating relation to the upper bay of New York that is borne by a statue of merely heroic size to the plaza in which it stands. This has been so successfully done that one is apt not to think of the difficulties until they are brought to his attention, but these were in fact very considerable. To avoid on the one hand making the pedestal a mere brute mass and to avoid on the other such an elaboration as should make it appear an independent work to be looked at for its own sake—these

were respectively the Scylla and Charybdis between which and clear of which the designer had to steer. It was fortunate that the island was already occupied by a fortification which might serve as an ample base for the pedestal, but it was not luck that gave the architect the perception of the value of this base and enabled him to make it an integral part of the composition. In fact it is the plinth of a structure of which the whole pedestal is the die and the statue the capital, while the pedestal has also its own triple division, and well avoids the extremes of crudity and of over-elaboration. Its proportions are not without felicity; its ornament, sparing as it is, yet suffices to emphasize the structure. It is in the right place and it helps to give the scale. In fact it is in this matter of scale that the monument is most successful, and the devices introduced to this end, though



STATUE OF LIBERTY.

New York Harbor.

Pedestal and base designed by R. M. Hunt.

unobtrusive, are indispensably necessary, the chief of them being the openings in the two stages of the pedestal, of which the lower will be still more effective and the connection between the base and the shaft of the pedestal will be sensibly more organic when the terraced stairways contemplated in the design come to be added.

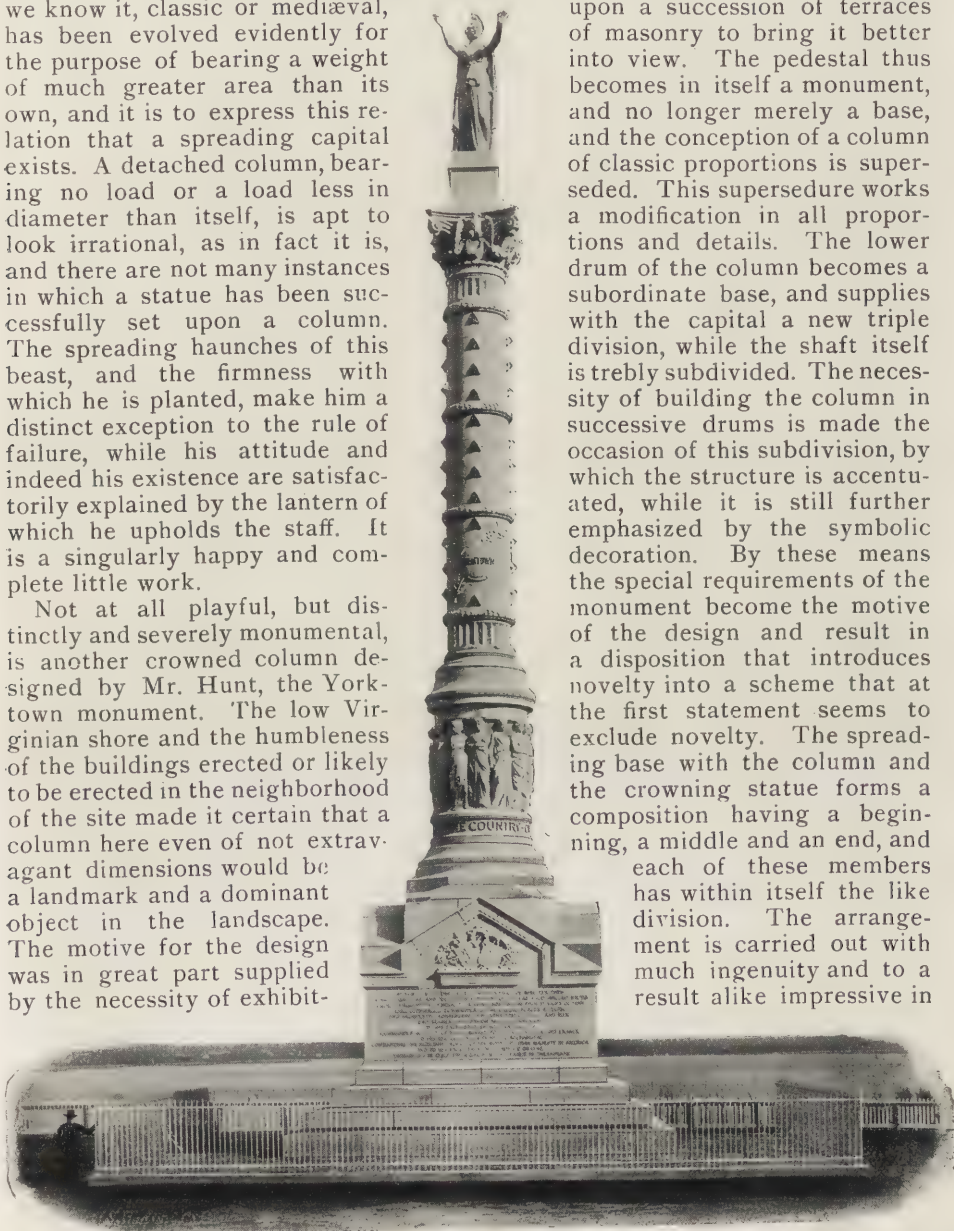
The Wadsworth fountain at Geneseo is one of the relaxations of architectural practice which do not often fall to

practitioners capable of enjoying them. They are ostensibly and professedly "amusing," and if they afford entertainment to the cultivated passer their purpose is accomplished. From this point of view the fountain is distinctly successful. It is a column, academically Gothic in design, from the griffes of the base to the mouldings of the abacus, and its Gothicism is enhanced by the application of the iron band, which has the same effect as the moulded

fillet which the mediæval designers and the English revivalists introduced so freely to mark the junction of the drums in columns that were not monolithic. The culminating bear has no local or heraldic significance, I believe, but it was a happy thought to introduce him. In fact the column as we know it, classic or mediæval, has been evolved evidently for the purpose of bearing a weight of much greater area than its own, and it is to express this relation that a spreading capital exists. A detached column, bearing no load or a load less in diameter than itself, is apt to look irrational, as in fact it is, and there are not many instances in which a statue has been successfully set upon a column. The spreading haunches of this beast, and the firmness with which he is planted, make him a distinct exception to the rule of failure, while his attitude and indeed his existence are satisfactorily explained by the lantern of which he upholds the staff. It is a singularly happy and complete little work.

Not at all playful, but distinctly and severely monumental, is another crowned column designed by Mr. Hunt, the Yorktown monument. The low Virginian shore and the humbleness of the buildings erected or likely to be erected in the neighborhood of the site made it certain that a column here even of not extravagant dimensions would be a landmark and a dominant object in the landscape. The motive for the design was in great part supplied by the necessity of exhibit-

ing a long inscription so that it should be legible as far as the detail of the monument was apprehensible. This requirement naturally led to the exaggeration of the base beyond what would have been fit, if it had been merely the substructure of the shaft, and to the raising of the inscribed die upon a succession of terraces of masonry to bring it better into view. The pedestal thus becomes in itself a monument, and no longer merely a base, and the conception of a column of classic proportions is superseded. This supersedure works a modification in all proportions and details. The lower drum of the column becomes a subordinate base, and supplies with the capital a new triple division, while the shaft itself is trebly subdivided. The necessity of building the column in successive drums is made the occasion of this subdivision, by which the structure is accentuated, while it is still further emphasized by the symbolic decoration. By these means the special requirements of the monument become the motive of the design and result in a disposition that introduces novelty into a scheme that at the first statement seems to exclude novelty. The spreading base with the column and the crowning statue forms a composition having a beginning, a middle and an end, and each of these members has within itself the like division. The arrangement is carried out with much ingenuity and to a result alike impressive in



THE YORKTOWN MONUMENT.

the mass and interesting in detail. This detail is not classical, but distinctly modern, and the treatment of it evinces a sure and practiced hand. It is very successful in scale, the detail taking its place in execution apparently quite according to its author's intention, while such of it as is symbolical shows spirit and invention as well as careful adjustment, as witness especially the modelling of the capital with its eagle.

The most familiar of all Mr. Hunt's works, that by which he is known to the greatest number of his countrymen, is undoubtedly the Administration building of the Columbian Exposition, and this clearly comes within the classification of monumental works. The utilitarian requirements of the building were so simple and compared with the whole so unimportant, as scarcely to be worth considering in a judgment of the whole. They were accommodated in the four pavilions that architecturally formed the base of the monument, and they interfered with its architecture only to the extent that, if they had had no practical uses, they would doubtless have been made more solid than it was in fact permissible to make them, and thus have given more completely the sense of the ultimate abutments of the structure. Above and within these the building was purely a monument. It had indeed one or two adventitious advantages. It occupied precisely the most important site upon the grounds, that which closed the vista of the Court of Honor in the approach from the lake, which was the approach chosen for their first visit by all visitors who were well advised, and were wisely provident of their first impressions. But this advantage would have been a drawback if the building had not been so triumphantly successful for its purpose, filled its place so perfectly, and been so conspicuously worthy of its predominance. The fierce light that beat upon the central and culminating point of such an architectural display as was afforded by the Court of Honor would mercilessly have exposed the defects of a building less successfully designed. A much more substantial advantage was that the Administration Building was the only one of the great plaster pal-

aces to which the exigencies of the occasion allowed an interior. All the other palatial architecture of the exterior was a mere and manifest mask to a construction of engineering work and the illusion of the spectator was suddenly snatched from him at the portal. Only in the vast arched trusses of the Building of Manufactures was the engineering construction so monumentally handled as to give the spectator an equally impressive reality for his lost illusion. But in the Administration Building the illusion was maintained, and the interior was the architectural counterpart of the exterior. This was undoubtedly a great advantage, and every one of the millions of visitors to the Fair who passed under the dome is ready to testify that the most was made of it. Indeed, there is no drawback to the complete success of the monument except what was enforced by the utilitarian exigencies of the angular and basic pavilions, and the somewhat awkward trisylar ordinance of these, which was perhaps entailed by the necessity of abundant light for what architecturally should be the solidest part of the design. But above the first cornice, criticism can be only praise. Nothing could well be happier in mass and in detail than the design of the superstructure. The quadrangular colonnade, decisively truncated at the angles, and reinforced here by powerful masses, still further punctuated by the crowning groups of statuary, is highly impressive in itself and yet more impressive as the base of the dome, with its powerful and emphatic ribs, a dome really soaring like that of Brunelleschi, and lightly poised upon its low, plain, eight-sided drum, "a noble, festal, glittering, shapely bulk in white and gold," worthy of its predominance as the central feature of the most imposing architectural display that has ever been seen on this side of the ocean, and to which it is hard to recall a parallel, either in permanent or occasional architecture, upon the other; in its kind not only the crowning achievement of its architect, but one of the chief triumphs of modern academic architecture.



ADMINISTRATION BUILDING.

World's Fair, Chicago.

Considering the extent and variety of Mr. Hunt's practice, and the fact that even at the beginning of his career, when an architect was held to be rather a superfluity in private building, the necessity of having an architect for a church was generally recognized, it seems rather curious that he should have done so little ecclesiastical work. He has done comparatively so little, indeed, that many who think themselves familiar with his work are unaware that he has done any churches. The chapel of the Presbyterian Hospital and the chapel of the Divinity School at Yale are excursions in a Gothic so individually treated as to lose almost completely its ecclesiastical associations. Mr. Hunt has indeed written in favor of the Byzantine type as more eligible than mediæval models for the uses of a modern Protestant church; and it is undeniable that this view finds some support, if not in the great domed structures which we associate with the name, in the smaller basilican churches of Syria and Asia Minor, our first real knowledge of which we owe to the French researches made in our own time. It seems to have been under the influence of this view that Mr. Hunt prepared his interesting design for Trinity Church, Boston, some twenty years ago, which distinctly in its detail, and to some extent in its arrangement, follows the Byzantine model; but it was probably too wide a departure from current notions of ecclesiastical architecture to have stood a fair chance of acceptance, even if Mr. Richardson's design, subsequently executed with such success, had not been prepared. The Marquand chapel, at Princeton, conforms much more closely in its exterior to the accepted type, but in its exterior it cannot be called successful. The scheme of the front—a stark, massive, unbroken campanile, surmounted by a light and open belfry, and flanked by a gabled front with a triple porch in the plane of the tower and a triple window in the recessed wall above, promises a more effective result than is in fact attained. The relation of the square shaft to its crowning member is not harmonious, nor is the design of the belfry itself

fortunate; and the contrast between the solidity of the tower and the openness of the adjoining front is impaired by the great and unrelieved mass of the gable. The porch is itself an effective and picturesque feature, but it does not suffice to redeem the front. The interior, however, is distinctly one of its author's successes, and in spirit, and often in letter, it reverts to Byzantine models. The apse is shallow, as befits the simple Presbyterian worship of which it is the scene, and from which the notion of an altar is excluded, but it is admirably proportioned and detailed, and in spite of the pointed arches and the Gothic treatment of the capitals, recalls the Byzantine half-domed apse, to which it owes one of its most successful features, the series of low openings in the drum through which the interior is lighted. It is only the suggestion that it does, for the working out of the suggestion is as original as it is successful. The scheme of decoration of the ceiling also suggests Byzantine models, and of their availableness as employed here there can be no dispute. The apse is a dignified, harmonious and impressive design, and the whole interior is noteworthy, especially the vigorous and ingenious treatment of the timberwork of the roof-construction.

A more successful ecclesiastical exterior is that of St. Mark's, Islip, which is not merely a church-building, but a parochial "plant," including a rectory and the dependencies of the church, combined into a very picturesque and effective group. In this the style is suggested by the material, and is distinctly Scandinavian in character. The most conspicuous badge of its architectural origin is the unmistakably Norwegian treatment and termination of the gables, but in other and more important though less obvious points a discriminating admiration for the Norse timberwork is equally discernible. The freedom and spirit of the style made it a very congenial medium for the architect, and the church, and indeed the whole group of which it forms the chief member bears evidence of being a thoroughly enjoyed piece of work. It has all the sprightliness of his early



Princeton, N. J.

INTERIOR OF THE MARQUAND CHAPEL.



Islip, L. I.

EAST END, ST. MARK'S CHURCH,

(Rectory at the left).

domestic work at Newport, while showing a far riper mastery both of composition and detail. Note especially the cleverness and originality of the treatment of the transepts, of the gable of the nave, and of the protruding and spreading porch. In invention, freedom and picturesqueness I know of no work of its author's superior to this.

To appreciate the buildings designed by Mr. Hunt for West Point, one must have known West Point before they were built. The old buildings of the post, done by military engineers, were fairly describable as "barracks," with all the order and solidity, and also with all the hardness and ugliness that that term denotes, without regard to their destination. Being called upon to add to their number an academic building and a gymnasium, Mr. Hunt so discharged his task as to dignify and embellish the whole group to which his works were added. It would have been easy, and to most architects it would have been tempting to put the old buildings to an open shame, and to compel attention to the superiority and the difference of the newer. This he care-

fully abstained from doing. He conformed, so far as conformity was possible, to what he found, retaining the conventions of military architecture, the machicolated cornice, and the crenellated parapet, but modifying the disposition of the masses so as to give weight and force where they are æsthetically needful, and to convert mere squareness and symmetry and substantiality into massiveness and dignity. The rough masonry of his buildings shows very little of express ornament. The whole force of the design resides in the artful disposition of the masses, and in the straightforward and structural character of the treatment. The most commendable point in the design, it may be said, is that the designer has produced an artistic result, while deviating so little from what he found, and conforming to it so much, and instead of undertaking the facile feat of putting the work of his predecessors out of countenance, has chosen the harder part of keeping them in countenance. In this view the academic building and the gymnasium at West Point are highly exemplary, as in



Islip, L. I.

CHANCEL AND SOUTH TRANSEPT, ST. MARK'S CHURCH.

any view they are very successful performances.

The Fogg Museum, the latest addition to the architecture of Harvard, bears testimony to the extent and intensity of the present tendency to revert to pure classic. The building may be and indeed has been criticised for its failure to conform to its architectural surroundings, and it is precisely this conformity, as exemplified in his buildings for the Military Academy, that we have just been praising. Of the non-conformity here there can be no question. The photographs of the Museum bear witness to it, in showing above and behind it in one view the

tower of the Memorial Hall, in a very active and militant phase of Victorian Gothic, and in the other a steeple with which the new building has as little congruity. But the conditions were by no means the same in the two cases. The building of West Point, such as it was, was all of a piece, whereas in Harvard, what was there to which the designer of a new building could conform? The college-yard of Harvard, like those of all our older seats of learning which have grown and not like some of the newer been made at a single stroke, exhibits a compendious history of American architecture from the time of its foundation. Colonial



Cambridge, Mass. .

FOGG MUSEUM.

both in the vernacular and in the educated version of Bulfinch, the old Greek revival, the Gothic revival, the Richardsonian Romanesque, nay, Queen Anne itself, all these phases are illustrated. It was quite out of the question that the designer of a single new building should be able either to give unity to this miscellany, or to give the effect of preponderance to one of the styles by which his building was surrounded. He really had no choice but to design it for its own sake and leave it to stand on its own merits; and these are very considerable. With such surroundings, it may well have seemed to him that his most legitimate aim was for the utmost purity, the utmost simplicity and the utmost quietude; and he may very well have considered that these qualities could be best attained by a design in strict classic, even without reference to its present vogue. Doubtless the building does possess these qualities, is first pure and then peaceable. A recessed centre, between

two projecting wings, prefacing a classic theatre—the problem is here reduced to its simplest expression. The openings are so designed and so placed as rather to emphasize than to interrupt the expanse of wall, the proportions, both lateral and vertical, are just and felicitous, and the detail is of course pure. The theatre is indicated from the front by the low gable with its acroterium, in a manner imperfectly shown by the engraving. In another important respect the engraving fails to do the building justice. The order, although engaged, has much more force, value and even detachment in fact than it appears to have. Nevertheless, and although the defect of scale which I have noted in the Belmont tomb is avoided here, I cannot think this upon the whole so successful an essay in classic, perhaps for the reason that it seems to be more consciously and deliberately such an essay. The other has the air of a work in which the idea controlled the execution, and the designer



Cambridge, Mass.

FOGG MUSEUM — REAR VIEW.

composed freely in a style in which he was entirely at home, without taking much thought for the style; this rather of an academic exercise, a learned and competent exercise, no doubt, but one in which academic correctness, the intention to produce an "example" was more consciously present.

It is a familiar fact that in architecture experience counts for a great deal, for more, perhaps, than in any other art. Nor is the reason of this far to seek. In any work of art the perfection of the expression is a larger element of artistic success than the value of the idea. The novice, or for that matter the layman, may have "happy thoughts" which would be of value to a skilled workman, but are of little or no use to the owner. When he tries to body them forth it is then the inexpert discovers that the embodiment is a matter of slowly and toilsomely acquired skill. The difficulty in architecture is peculiarly great, because here the artist can never see his work

until it is irrevocably done. He has to imagine at every step in his notation of an architectural idea, not how his drawing looks on paper, but how the object imagined and not seen will look in the sunlight and at a given distance. He never sees the thing itself until it is too late to correct it. Even a designer of long experience finds that he is continually deceiving himself as to the effect of his dispositions, that the features he draws, when they come to be built, are larger or smaller, more or less emphatic, more or less conspicuous than he meant them to appear. The designer who has never built anything is hopelessly at a loss. Hence it has been said that no architect ever learned detail except through his own mistakes. No other artist is under a like disability to the same extent—no other, unless it be the composer, whose score bears much the same relation to his work of art as the architect's drawings to his, and who has to imagine, as he jots down notes on paper, how the succes-

sion and combination of them will sound in the orchestra.

This consideration may be incidentally commended to the various lay projectors of competitions, who commonly go in fear lest by confining their competition to architects of standing and experience they may be excluding the unknown genius who has done nothing. There is no such person, and no complete exception to the rule that first essays are failures. Skill in architectural design is a plant of slow growth.

most conspicuous of them plain that the architect has not been hampered or compelled to curtail his design for want of money. The designs have merely been adequately executed. If one imagines that the advance is not strictly an artistic advance, let him compare the houses of moderate cost of this latest period with their predecessors. There are two of these, as it happens, among his recent works at Newport, one dating from 1883 and the other from 1891. Neither of them



Newport, R. I.

RESIDENCE OF PROFESSOR SHIELDS.

Our present subject affords a very interesting exemplification of this truth. For, it will scarcely be disputed that Mr. Hunt's most brilliant successes have been won within the last fifteen years, and since the artist reached his fiftieth year. He has within this period been employed mainly in domestic work, and the increase in the costliness of private houses must be allowed to count for something. While not one of his later houses can fairly be charged with making an effect of mere ostentation and prodigality, yet it is in the

has palatial pretensions, and either, so far as scale and costliness go, are representative rather of the Newport of the seventies than of the Newport of the nineties. It is strictly in artistic success that the advance is shown. The cottage of Professor Shields is not a palace but a cottage; the bungalow of Mr. Busk is a bungalow and not a palace, and each is a very successful piece of architecture. The gist of the design in the former is the projected centre of each of the principal fronts, crowned by a hipped gable, making



Newport, R. I.

THE RESIDENCE OF J. R. BUSK, ESQ.



Newport, R. I.

RESIDENCE OF J. R. BUSK, ESQ.

two features of equal size and importance; a perilous project when it is stated in words, for it seems to promise an irreconcilable competition. It has been so successfully carried out that one quite forgets that there was anything temerarious in the scheme. The reconciliation is effected by the carrying up of the angle between the two fronts into a loggia, of which the roof furnishes the dominant feature of the composition, and unites at once and subordinates the equal fronts. The effect of this disposition is enhanced by the detail. The stone basement is carried through the second story in the front, and the sense of a building in layers thus escaped, while the decoration is everywhere a development of the construction, the architecture a straightforward expression of function and an idiomatic treatment of the material. The only drawback to the complete success of the work in execution is the unfortunate and obtrusive crudity of tint of the orange tiling with which the upper walls are hung. As a matter of design, however, the cottage has lost nothing of the continuity and spirit of the author's early work in the same kind and it has gained the unity and repose that that was apt to lack.

Even happier is the bungalow in rough masonry built for Mr. Busk. This is a sea-side cottage reduced to its simplest expression and gaining greatly in force from the reduction. Nothing could be simpler or more fortunate than the composition of the principal front, the unbroken of projected as a verandah, the low linking towers and the low wings, and the other front is scarcely less succinct. This reduction of a front as a feature was the process employed by Mr. Richardson in his most successful works, and was the main factor in their success, but in this bungalow the Richardsonian simplicity is attained without the Richardsonian exaggeration. The architecture is in so complete a congruity with the topography that the house seems to be a part and outgrowth of the landscape in which it is set. There can be no higher praise for a country house than this.

Neither of these, however, is a typical example of the work of Mr. Hunt's riper years. This has been in the main the adaptation to modern and American needs of the French architecture of the sixteenth century, the architecture of the châteaux of the Loire. Called French Renaissance, this architecture is so much less Renaissance than it is French that its chief historical interest is in the demonstration that it makes how hard French Gothic died and how it was a whole century before the indigenous architecture of craftsmanship gave way to the exotic architecture of dilettantism, how little the imported detail for so long affected the native method; while its chief æsthetic interest is in the picturesque and romantic conceptions which refused to be formalized and classified by the influence of the Roman revival in Italy. Certainly there could not have been a happier choice for our subject, nor one through which his nature and his training could have been reconciled and combined to the best results. The first of his works in this kind was the house of Mr. W. K. Vanderbilt in Fifth avenue. It was at once popularly acclaimed as by far the most successful of the four great Vanderbilt houses which were building at the same time, and which had been executed with a regardlessness of expense quite new in our domestic architecture. It was also recognized by the more critical inspectors as a distinct advance for its architect, and a successful new departure at an age when most men shun experimentation and work "after as they have been accustomed." After twelve years one is not inclined to retract or modify his original admiration, in which, therefore, it is plain that novelty had no part. Indeed, there is nothing to be said in qualification of one's admiration, excepting that the treatment of the roofs is less successful than that of the walls, unless one be inclined to maintain that the design is too individual and too pictorial for a town-house, and would go better with more detachment than Fifth avenue affords. Considering the gratitude we owe to the designer for giving us something in Fifth avenue so well



THE RESIDENCE OF ELBRIDGE T. GERRY, ESQ.
5th avenue and 61st street, New York City.

worth looking at, to press this point very hard would be cavilling. That a dwelling with such a wealth of detail should make its chief impression by force of its general design, and that the detail should take its place so well as to make that impression one of power and stateliness rather than of "elegance" is a real and a strictly artistic success.

In subsequent works in the same style the artist has seemed to agree with his critics in respect to the comparative weakness of his treatment of his roofs and of the lack of complete unity entailed by the absence of a distinctly dominating feature. The house of Mr. Borden, on the Lake Shore Drive in Chicago, bearing a general resemblance to the house of Mr. Vanderbilt, and like it, executed in a monochrome of gray stone, is more coherent and unified, and so more successful in composition. But to me the latest of Mr. Hunt's town-houses in what we may still call French Renaissance, though here the detail is all Gothic, that built in Fifth avenue for Mr. Gerry is distinctly the most interesting and the most successful. If it is not popularly appreciated at its real worth, the reason is that comparatively few persons take the trouble to look at it from the point of view for which it was designed, the point of view from which our illustration is taken, which is the opposite sidewalk skirting the park. One may pass the Fifth avenue front, and while he cannot but admire the detail, he may observe and resent the lack in this front, not only of formal symmetry, but of balance, without observing, unless he crosses the avenue and takes the right point of view, that this incompleteness of a part is necessary to the completeness of the whole, and to the effect of variety in unity which the designer aimed at and which he has attained. Indeed, in this respect I know no similar work of its author's which equals this, and none of any modern architect that surpasses it. The motive of the composition is the convergence and "pyramidization" of the lines of both wings to the apex of the roof of the tower-like central structure at the angle. The danger of

this scheme is the monotony that would result from a uniform treatment of the fronts on the one hand, and on the other, the lack of unity that would result from a too different treatment. Both dangers have here been foreseen and obviated. The tower upon which the wings converge is a stark and solid mass, pierced with openings that rather emphasize than impair its massiveness. Yet even here monotony is avoided by the differences in the disposition and treatment of the openings in each story, and baldness by the richness and elaboration of the tall dormer that crowns each front. In the wings there are central features of like richness and elaboration, which in effect complement and balance each other, but which are entirely different in form and detail, and which are not even in the same story, that on the avenue front being the loggia in the second story, with its projecting corbelled balcony and its richly cusped elliptical arch, that on the street front the triple group of windows in the third, with their cusped and canopied arches, and the balustraded parapet that connects them. The regularity in effect of the general composition obviates the criticism that this is a country house in town, while the picturesque and romantic detail, scholarly and artistic as it is, is a positive gain. A private dwelling which is so distinctly an ornament to the city is one of the public possessions.

The houses built for Mr. Marquand in Madison avenue in brick, and sandstone, have all the spirit and animation of what we have called Mr. Hunt's staccato style, but subdued into a new repose and keeping. The southern front of this group of houses is stately and dignified; the avenue front, including the two smaller houses, admirably composed and admirably detailed. Our street architecture has nothing better to show in the treatment of the 25-foot front than these examples, in which the houses are just sufficiently individualized without losing the sense of ensemble. One of the most admirable points of the composition is the way in which the slope of the ground makes itself felt in the design of the houses, the line



DINING-ROOM IN RESIDENCE OF H. G. MARQUAND, ESQ.

New York City.



New York City.

DINING-ROOM IN RESIDENCE OF H. G. MARQUAND, ESQ.



DINING-ROOM MANTELPIECE IN RESIDENCE OF H. G. MARQUAND, ESQ.
New York City.

“Ochre Court.”

Residence of
OGDEN GOELET, Esq.
Newport, R. I.

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Newport, R. I.

THE RESIDENCE OF OGDEN GOELET, ESQ.



Newport, R. I.

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Newport, R. I.

THE RESIDENCE OF OGDEN GOELET, ESQ.





Newport, R. I. . . . MAIN HALL AND STAIRCASE, GOELET RESIDENCE.



Newport, R. I.

MAIN HALL, GOELET RESIDENCE.



Newport, R. I.

DINING-ROOM — GOELET RESIDENCE.



The "Breakers."

Residence of
CORNELIUS VANDERBILT, Esq.
Newport, R. I.



Newport, R. I.

THE "BREAKERS,"



Newport, R. I.

THE "BREAKERS."



Newport, R. I.

THE "BREAKERS."



Newport, R. I.

THE "BREAKERS" — MAIN HALL



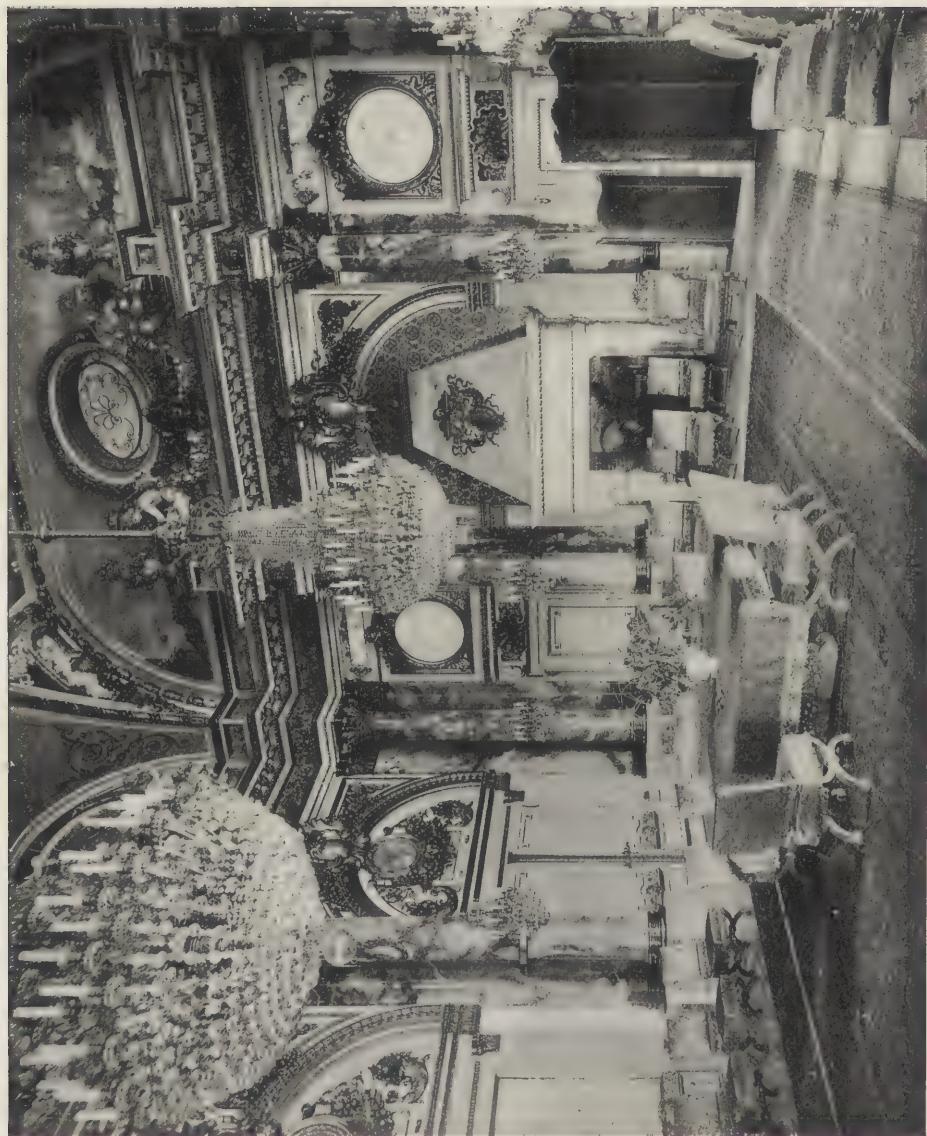
Newport, R. I.

THE "BREAKERS"—MAIN STAIRCASE.



Newport, R. I.

THE "BREAKERS" — SECOND STORY HALL.



Newport, R. I.

THE "BREAKERS" — DINING ROOM.



Newport, R. I.

THE "BREAKERS" — DINING-ROOM.



THE "BREAKERS"—THE LIBRARY.



Newport, R. I.

THE "BREAKERS" — BILLIARD ROOM.



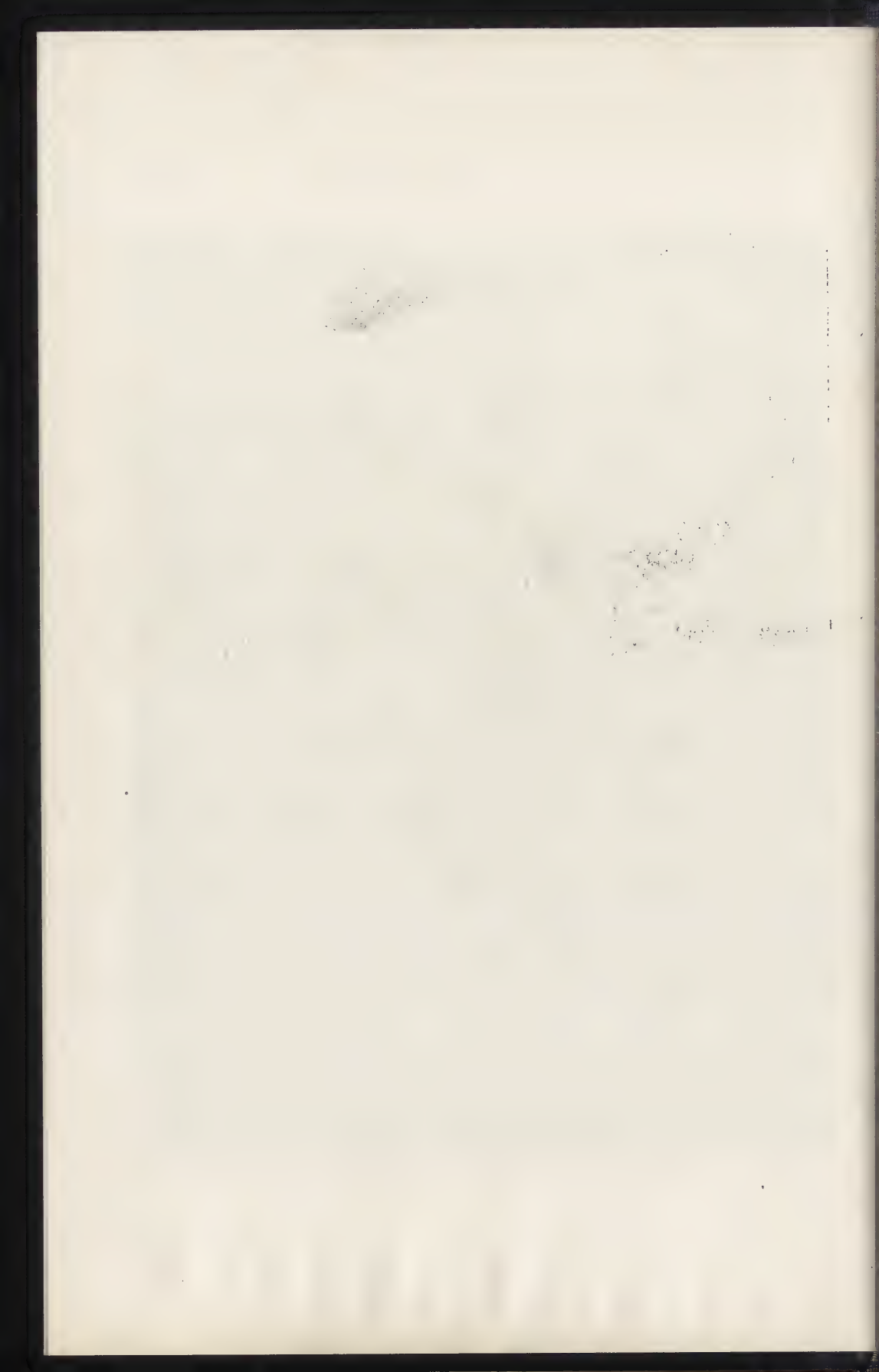
Newport, R. I.

THE "BREAKERS" — FIRST STORY LOGGIA.



Newport, R. I.

THE "BREAKERS" — SECOND STORY LOGGIA.



"Belcourt."

Residence of
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Newport, R. I.

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Newport, R. I.

"BELCOURT."



EXTERIOR OF LOGGIA, "BELCOURT."



INTERIOR OF LOGGIA, "BELCOURT."



STAIRCASE HALL, "BELCOURT."



SECOND-STORY HALL, "BELCOURT."

of the basement being carried through on a level, while the rise is recognized in the successive lifting of the roofs. These houses are especially exemplary and suggestive, for they are solutions of problems much more frequent than the "palatial residence" that occupies two or more city lots. The suggestions they carry have been utilized by sensitive designers who have perceived the availableness of the style of the châteaux for modern dwellings. It has been utilized in some degree in dwellings that rank among the best on the west side of New York. It has been utilized in a very marked degree by the young architects who are acting as artistic missionaries in *partibus infidelium*, and who astonish the wayfarer by providing him with an occasional artistic and charming house in the style of the French Transitional, in darkest Philadelphia.

I have repeated, without attaching much importance to it, the only disparaging remark that one hears of the architecture of Mr. W. K. Vanderbilt's house, to wit, that it is a château without the accessories and surroundings of a château. Undoubtedly the architecture of Francis I. reached its perfection in the châteaux, and it is worthy of note that the chronological classification is here misleading. Not only the architecture of the time of Francis I., but the works of that great builder himself show wide divergencies. The châteaux, especially the châteaux of the Loire, are essentially as mediæval as the Hotel Cluny, a work largely of the fifteenth century. In the hôtels the builders omitted all that they could, which was all that they were conscious of, of their inherited way of thinking, and showed the same eagerness to adopt the new forms and the same desire to appear "in the swim" and "up to date" that characterize the common modern architect. Thus contemporary buildings of the sixteenth century appear by turns essentially Gothic and Renaissance—that is to say, French or Italian. Undoubtedly, however, the architecture of the châteaux appears to its best advantage in châteaux, that is to say in country houses set in spacious and park-like grounds.

Ochre Court, the house of Mr. Ogden Goelet, at Newport, nominally a "cottage," by its situation and surroundings a villa, by its sumptuousness and elaboration a palace, is by its architecture a true château. Here it will not be disputed the architect has risen to the new opportunity that was furnished to him by the extent and detachment of the building and by the power of conforming and subordinating the immediate surroundings to the architecture. Such an accessory as the fountain with its screen of arches is not only in itself an admirable piece of design, but serves an important purpose in signaling and specializing the character of the "place." The design of the house itself is most distinctly and triumphantly successful. In fact, in its subtle harmony and its sure felicity the entrance-front of Ochre Court is to me precisely the most artistic composition that its author has produced. I am bound to admit that the wing of subordinate apartments on the left of the entrance-front is not thoroughly incorporated in the general design. Spacious as it is, for Newport, the site is not spacious enough to admit of the reduction of these subordinate apartments to their real place of offices by giving them less height and spreading them over a wider area. They now form an annex which in considering the design is negligible, and of which the treatment denotes that it is meant to be as much as possible neglected. Omit it, then, and consider the front proper, which really concludes with the angle just to the left of the three-sided bay. How admirably complete and sufficing is the balance of the composition without formal symmetry, how subtle the devices, including the stopping of the string-course which divides the flanking stories, by which a due and not more than a due predominance is given to the entrance pavilion, and how admirably is this in itself composed and detailed. Could anything be more effective than the expanse of wall, with only the great opening at the centre that so clearly designates what is behind it as the great hall of the mansion, the single



Newport, R. I.

THE MARBLE HOUSE.

Residence of Mrs. W. K. Vanderbilt.



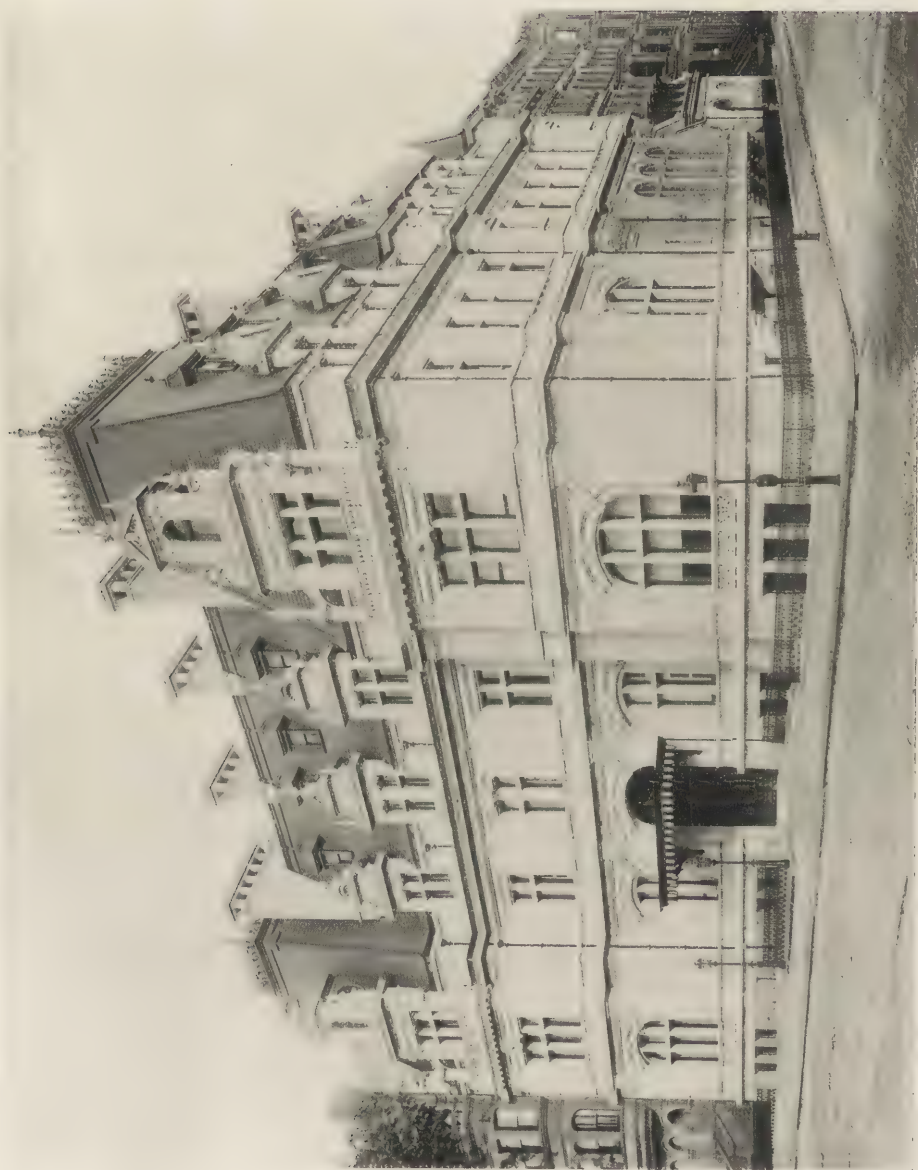
THE MARBLE HOUSE.

Newport, R. I.

tall, rich dormer relieved against the otherwise unbroken slope of roof, and the devices, the low plain openings that give upon the balcony and the embossed masses of carving above, by which the expanse is at once relieved and accentuated? What have our modern times to show more noteworthy than this as an example of a free and romantic domestic architecture, or how is it less noteworthy than the châteaux of the Loire, except that it has been preceded by them? And the modern designer has proceeded not by way of imitation but by way of assimilation, by learning and in his turn and in his own way inculcating the lesson they had to teach. The garden front of this house is a scholarly, rich and tasteful performance, an excellent "example" of the architecture of the châteaux. Very likely many observers may prefer its more exact symmetry to the subtler harmony and balance of the other, forgetting Bacon's "there is no excellent beauty that hath not some strangeness in the proportions." But to the present observer the personal and incommunicable element in the design of the entrance-front is much more than mere architectural scholarship, is the individual quality that the best use of architectural scholarship is to elicit.

Even this, however, does not fulfil the idea of a château, and that idea cannot be realized under the conditions that obtain at Newport. The grounds of the great places there are ample for villa-sites, but inadequate as the setting of the palaces that have come to be built upon them. In this case, as we have seen, the restriction reacts upon the architecture and mars its complete expressiveness by forcing the dependencies of a great house into rivalry with its principal apartments instead of enabling the designer to keep them in subjection. But even waiving this, no sensitive observer can look upon the palaces of Newport without feeling that they are misplaced. A noble mansion that might well be and that in another country would be the show-place of a shire is cramped into a site proper to a watering-place villa. A château cannot be fairly estimated in

such a place. One thinks of Blois dominating its town, of Chenonceaux bestriding its river, of Chambord, with its park of twenty miles in girth, and has to own that other things than the skill of the architect go to the making of a true château. Time, of course, and that can be supplied only in time, but also space, and that the social exigencies of Newport will not permit. It has been Mr. Hunt's great good fortune to have for once, in Biltmore House, an opportunity to design a true château, with the surroundings and accessories of nature and of art proper to a château, having not only the elaboration and the costliness, but also the magnitude, and above all the detachment, which the scheme requires. This was a chance to create a true "seat" to enhance the refinements of his architecture by its contrast with the noble and primeval landscape which it commands, and to invoke the most skilful co-operation in the landscape-architecture which mediates between the two. The illustrations will show much better than the writer, who shares with the reader the disadvantage of not having seen the actual work, can tell, to what result the architect has employed his opportunity. The reader cannot fail to note how great an advantage has come from the absence of limitations, not alone in cost, for Biltmore House shows no more regardlessness of expense than the palaces of Newport, but in any respect whatever upon the freedom of the designer. No pent-up "villa site" here contracted his powers. As much as he might need of "the whole boundless continent" was at his disposal. Nobody can fail to note the advantage of this freedom in the royal scale of the château which he has set upon the plateau converted into a terrace, nor how the architect has used his advantage. The dependencies of the main building here take their places as dependencies, for there is ample room to let them come as they will and not as they must, and this amplitude is of the utmost value, as enabling the architect to give the sense of freedom, of variety in unity, and of frank expressiveness that forms the charm of the masterpieces of the style he has



5th avenue and 65th street, N. Y. City.

RESIDENCE OF JOHN JACOB ASTOR.

chosen. Neither can it be overlooked how effective is the contrast between the richness and refinement of the entrance-front, a richness and refinement enhanced by the formal garden which forms the approach, and the comparatively rude vigor and spirit of the opposite front which opens directly upon the wide prospect of the wilderness. Upon this side the sloping revetement that faces the terrace and extends far beyond the house, not only furnishes an effective base for the mansion which stands at its centre, but becomes itself an important member of the architectural composition. Its value is very greatly enhanced by its ingenious masonry, which not only contrasts effectively with the smooth ashlar above, but gives to the basement a texture which is visible and valuable as far as the building can be seen. The front as a whole, and including the stables at one end as well as the terrace wall at the other, is an excellent example of a general balance in composition, and of its advantage, certainly in a country-seat with wild natural surroundings, over a more strict and formal symmetry. The centre, distinctly marked and bounded by its two towers, is emphasized by the expanse of wall of the wing on one side and the low cluster of the stables beyond, and on the other by the emphatic blots of shadow of the loggia and by the terminating terrace-wall. In the other front, as its general scheme made fit, there is a somewhat closer approach to formal symmetry. The masses on each side of the central tower with the attached open staircase, of which the motive, and only the motive, is borrowed from Blois, are equivalent, but they are not equal, and much less identical, and it is to the inequality in their equivalence that the front owes the life and movement it obtains without sacrifice of clearness or of dignity. The roofs are here as successful as the walls they crown and cover, and unite instead of scattering the masses beneath, while there are in their treatment very positive felicities, as in the steep hood of the three-sided bay at the end of what may be called

the forest front. I wish that it had been possible to illustrate more fully the detail by which the effect of these dispositions is so much heightened. But the general views suffice to prove that if the architect had an opportunity in its kind unequalled on this side of the ocean—and indeed upon the other, since the old châteaux of like extent with Biltmore House were composed piecemeal and in different generations, and not at a single stroke—he has taken advantage of it to produce a result also in its kind unequalled.

It seems to me that the brilliant success of these buildings, which undoubtedly constitute the most fruitful and influential part of Mr. Hunt's long professional labors, would of itself sustain my contention that he is essentially a romantic and not a classic. That contention seems to me to be further supported by the less pronounced success and felicity of his classic designs. It may be, of course, that this seems so to the critic because romantic art appeals to him more forcibly than classic, and that it is his personal equation rather than that of the artist that needs to be allowed for in this comparison. But one cannot designate any works of Mr. Hunt that are classic in spirit, unless a partial exception be made of the Belmont tomb, which are so successful in their own way as these works of romantic architecture. The Administration Building at the World's Fair may occur to the reader's mind as an exception, but I said classic in spirit and that is classic only in letter. Though it is compiled of classic forms they have been transmuted into a modern result. One cannot conceive it as having been designed in republican Athens, setting aside the forms later than Attic, or even in imperial Rome. This alert and bristling pyramid is as much and as characteristically Parisian of the second Empire as M. Garnier's Opera-house itself, which is so clearly the most Parisian thing in Paris. In the town-house lately completed for Mr. Astor in New York, the architect has essayed the Parisian or urban version of what must still be classified



Hyde Park, N. Y.

RESIDENCE OF ARCHIBALD ROGERS, ESQ.

as the architecture of Francis I., a phase in which the importation from Italy had almost overborne the indigenous French spirit, in which both composition and detail had become formalised if not classicised. There is in this phase something lumbering and uncouth than which nothing could be less French and which reveals itself as the awkwardness of a borrower, for the French builders of the sixteenth century, when they undertook to reproduce the new Italian fashion, produced something the same impression as a Japanese lady in European costume. One thing doubtless is to be said in favor of the adoption of the more classicised French architecture, be it of Francis I. or of Henry II., and that is that it is unmistakably urban and obviates the criticism passed upon the works of the true French Renaissance of not being urban enough. There is no dispute that this is an "hôtel" and not a château. The style offers an advantage also for the emphasis of length, which is the most striking fact in the design, and which is so successfully managed that one would guess the entire front to be much longer even than its actual and unusual extent of 125 feet. The most striking and successful feature of the composition is not, however, upon this front, but is constituted by the three tiers of triple openings at the centre of the side, admirably composed and detailed. Upon the whole, this mansion is respectable and dignified; it is even imposing, but it lacks the romantic charm that belongs to the work of its designer when he is working in a freer manner, while it does not at all aspire to the classic purity that to many observers is an attainment even more attractive than romantic charm.

A building that does evidently so aspire is the Marble House built for Mr. W. K. Vanderbilt at Newport, but it can scarcely be said to attain. The portico in itself, with its monolithic columns and its colossal Roman Corinthian capitals, is very stately and imposing, but it derives little additional impressiveness from its setting. The portico may architecturally comprise the whole front, the wings being

entirely subordinate appendages, or it may be merely a central decoration in an expanse of wall. Very successful façades have been composed on each of these lines. But it seems that here it is either of too little importance or too much, being virtually equivalent to either of the wings, and the front thus consists of three equal parts. Moreover, the front suffers from the concealment of its base, by which I do not refer to the devices to which the owner has resorted to obstruct its visibility, but to the cutting off of the stylobate by means of the balustraded driveway which is part of the architectural scheme. So that, upon the whole, the main front does not give that sense of exactness and felicity in proportion, that impression of just-rightness which we call "classical," classic and correct though the front be. The garden front of the same dwelling seems to me a far more successful composition. Here the recessed centre is much longer than either of the projecting wings, nearly as long as both of them, and this difference at once establishes a proportional relation between the parts and renders it possible to unite them into a whole, such as it is impossible to compose of three virtually equal parts. Moreover, the disposition suggests and promotes an emphasis and predominance of the horizontal lines, whereas one of the misfortunes of the composition of the other front is that it prevents the predominance of either height or breadth and the subordination of the other dimension. Again, the garden front has the advantage of a distinct and emphatic stylobate, and the treatment of this terrace, with its flanking stairways and its central balustrade is an integral and effective part of the architecture. Indeed, it is a stately and harmonious front, to the complete success of which the only drawback is the tristylar engaged order of the wings, an arrangement upon which I have remarked in the pavilions of the Administration Building. This disposition, I think, is not preceded in antique architecture, though abundantly in the Renaissance, and in these instances appears to be clearly a drawback.



RESIDENCE OF OGDEN MILLS, ESQ.

5th avenue and 69th street, N. Y. City.

Belcourt, at Newport, as the illustrations show, offered a very unusual problem that enforced an unusual treatment. If the illustrations do not quite explain themselves, they will be sufficiently elucidated by the verbal explanation, that the building is the abode of a bachelor with a taste for horses and hospitality; that is to say, a palatial stable with an incidental apartment and an incidental ball-room. It is vigorous and direct in treatment, and successful, on the outside, where the materials are stone and brick and rough-cast, and even more in the court, where the materials are timber and rough-cast, and where a homely and effective picturesqueness is added to the frankness and directness of the exterior, by the galleried arrangement and by the free-Gothic of the detail.

I have adverted in speaking of Mr. Hunt's earlier works to the oscillations which they show from extreme formality to complete unrestraint, and how, in alternating—

From grave to gay, from lively to severe—

he has shown no trace of severity in his lively performances or of gayety in his gravity. In the works of his riper years and his practiced powers, he seems to have retained this habit, by turns to have restrained his designs in classic strictness and to have relaxed it in freer architecture. But there is this great difference between the periods that while his more formal works used to be liable to the charge of monotony, and his more exuberant works to that of restlessness, he has learned to combine his qualities, to give animation to works essentially academic, and repose to the children of his invention. The "Breakers," Mr. Cornelius Vanderbilt's house at Newport, is an entirely decorous and correct "villa in the Italian style," and in the Italian rather than in the American sense of the word, by reason of its extent and its sumptuousness; yet nobody would think of calling its decorum dull, or of saying that it lacked variety. It suffers, undoubtedly, from the restriction of space entailed upon even the finest and most extensive sites upon the cliff at Newport. But for this

restriction it seems safe to say that this also would have had more area and less height, that the subordinate rooms now relegated to the upper story would have been spread out over the ground in lower wings, and that it might have been possible to omit the third story altogether. If this had been done the "institutional" look the villa now has in some aspects, especially from the side, would have given place to a more domestic expression—if a palace can be said to be an example of domestic architecture. But this misfortune does not prevent the villa from being a very successful and imposing work. Each of its principal fronts has its own leading motive, which gives it a unity and a physiognomy of its own, while holding it strictly in keeping with the others and with the whole. It is hard to assign a preference among these fronts, each is so carefully and successfully studied and adjusted to its own central feature, whether this be the hemicycle porch of two stories with its flanking loggia, or the massive square porch with its triple arches, or the lighter and more elegant double loggia of the garden front. Each is a true architectural composition, and the whole gives forcibly the impression of a gentleman's mansion, in which the enrichment is accessory to the architectural idea, and in which the massive and monumental workmanship, so far beyond our old notions of a "sea side cottage" are merely the fitting presentation of that idea.

That is also the impression that the interiors of these palaces convey. More reserve is due, of course, in speaking of these than in speaking of the exteriors that submit themselves to the judgment of every passer. The primary impression of the great halls and the banqueting rooms of the Newport palaces is necessarily of magnificence. The untravelled American can nowhere else have received such a sense of architectural splendor as overcomes him here. But in these things also it is the intellectual, the artistic element of design that gives them value, as truly as it gives value to a picturesque shingled cottage. Mere ostentation is mere vulgarity. One



Madison avenue, N. Y. City.

BRONSON RESIDENCE.

need not go far, one need not even leave Newport, to see apartments which are merely costly, and in which the chief element of design is the design of ostentation, insomuch that the spectator wishes that the fashionable upholsterer, who remains a fashionable upholsterer even when he assumes a much more pretentious title, had had less money to spend. But in such works, if one may be pardoned the specification, as the great halls of the Breakers and Ochre Court, and as the dining-room of the Breakers, the splendor is simply the adequate execution of an artistic design. If it were

permissible to cite examples of the other kind from domestic architecture the contrast, and the explanation of it, would be self-evident. In the examples here illustrated *materiem superat opus*, in the others the material overpowers the design and luxury abolishes art. An interior which is at the same time palatial and artistic is, to quote Bacon again, rather "graced with elegance than daubed with cost." It offers matter for study as well as for astonishment, and of such, as all who know the originals will agree, are the interiors here illustrated.

It is a pleasure to enumerate the

honors by which Mr. Hunt's professional distinction has been recognized and attested, especially during these latter years, and abroad as well as at home. He has been made President of the American Institute of Architects, and of its New York Chapter; LL.D. of Harvard (1892); Honorary and Corresponding Member of the Académie des Beaux Arts, Institut de France (1883), Chevalier of the Legion of Honor (1884), Member of the Société Centrale des Architectes Français (1886), Honorary and Corresponding Member of the Royal Institute of British Architects (1886), Honorary and Corresponding Member of the Ingenieur and Architekten Verein of Vienna (1887), Academician of St. Luke's, Rome (1892); Associate Member of the Institut de France (1893); finally, in 1893, he received what is undoubtedly the "blue ribbon" of the profession of architecture, in the Gold Medal of the Royal Institute of British Architects.

An incidental service of Mr. Hunt to his profession in the training of young architects should not be omitted from a review of his career. In his riper years his only pupil has been his son, Mr. Richard Howland Hunt, who, eight years ago, after the conclusion of his academic studies at the Boston Institute of Technology in Boston, and at the École des Beaux Arts in Paris, became associated with his father in what may be called a post-graduate course, and whose independent works show the influence and the value of that association. But in the earlier years of his practice Mr. Hunt was the first, and perhaps remains the only one of American practicing architects to convert his office into an *atelier*, in which the draughtsmen were also students, and in which systematic instruction was given to them. This education is no longer needed in view of the facilities for technical study that have been provided at home and of the increased facilities for studying abroad, but it was really a want that the young graduate of the Beaux Arts undertook to meet. That there was nothing dogmatic or magisterial in his inculca-

tions may be inferred from even the early works of his pupils, among whom were Professor Ware, Mr. Van Brunt, Mr. Post, Mr. Furness of Philadelphia, and Mr. Gambrill, until his death the partner of Richardson. The buildings of these architects, various as they are in manner and different as they are in merit, scarcely recall their teacher, except that the excesses of what we have called Mr. Hunt's staccato style, which he himself has long ago outgrown, may perhaps be traced and even in an exaggerated form, in some of the wilder works of Philadelphia. The ultimate responsibility for these erections is not light, but if any part of it could be fixed upon the teacher of the actual disturber of the peace, the teacher might, as we have seen, plead a set-off in the fact that as a teacher by example only, he has had his share in the production of the buildings that serve Philadelphia as at once ornaments and needed lessons of the value in architectural design of peace and quietness, of refinement, of harmony; the value, in a word, of careful and affectionate study. In Mr. Hunt's own work the same lesson is inculcated. It is a great satisfaction in tracing the career of an architect to be well assured, as in this case one is by internal evidence, that one is dealing with the work of an individual and not of an "office," and that the changes that one notes are the results of personal development. These pages have sufficiently shown that the changes have upon the whole been steady advances. The only emancipated graduate of the Beaux Arts coming from a scene of academic strictness and convention, considerably stricter and more conventional forty years ago, perhaps, than it is now, came upon a scene of complete architectural liberty, where there was no body of instructed opinion and no standards founded either in academic conventions or in the nature of things. It was not to be wondered at that he should have taken advantage of his sudden enfranchisement and have disported himself in some rather pranksome exuberances, in alternation with merely decorous and conventional performances. But "there is only one cure for the evils



Oakdale, L. I. RESIDENCE OF W. K. VANDERBILT, ESQ.

which newly acquired freedom produces, and that cure is freedom." The restraint which an artist imposes upon himself of his free choice is more valuable than that which is imposed upon him from without. Hence, in some measure, it is that Mr. Hunt's career has been a steady growth, and that even now, after forty years, and at sixty-seven, one cannot say that his best work is not before him. I cannot hope that the reader will have more than a small part of the interest and pleasure in following that career that the writer has had in tracing it, but I am confident that the reader will agree with the writer that the survey in illustrations of the most typical works of his career from the beginning must greatly expand one's previous estimate of the force, range and versatility of the designer. I am sure that he will agree that the series of works here illustrated, and extending over forty fruitful years, shows an untiring zeal for a great art, a steadily increasing skill and power in its practice, and constitutes a sum of achievement honorable to the artist, of good example to his profession and creditable and useful to his country.

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The foregoing remarks, excepting such additions as have been required by new material for illustration, were written during the lifetime of their

subject, and with the expectation that he would be among their readers. Upon looking them over, now that he can no longer be pained or pleased by whatever may be said of his work, I decide to let the form remain unmodified because it seems to me that as they stand they constitute a kind of tribute to the man, not less than to the architect. I am not conscious of having suppressed in them anything unfavorable that I had to say of any phase of his multiform activity; but I had a serene confidence that he would not take amiss any honest expression of opinion about his work, whether it happened to be favorable or unfavorable, and whether or not it happened to agree with his own. He neither had nor affected a stoical or a cynical indifference to what was thought of his work—he affected nothing—but he felt that it was the work that availed and not what was said of it. I heard him say once, in speaking of some published strictures upon a building of his: "I can't help it; I do my best."

That this is true the preceding pages have borne ample witness. Indeed, nothing could be more admirable or more enviable than the zest with which to the last he attacked a new problem—the freshness and the freedom from any suggestion of jaded or perfunctory work as complete as if he had never designed a building before. Of course this argues not only an unusual



New Dorp, S. I.

THE VANDERBILT MAUSOLEUM.



THE LATE RICHARD MORRIS HUNT.

conscientiousness but also an unusual vitality. His vitality, indeed, exuberant in the work of his youth and his middle life, formed a large element, not only in his work but in his personality, long after he had come to be recognized as a senior in his profession; insomuch that it was only within the last year or two that he made at all the impression of an old man.

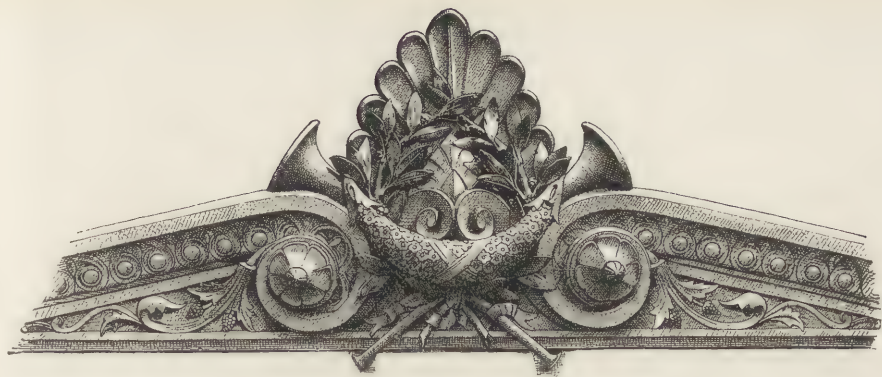
A directness amounting sometimes to abruptness in Mr. Hunt's manner used to puzzle and sometimes to displease strangers. But it did not take an intelligent stranger long to perceive that this was the expression of a perfectly unaffected simplicity and of a perfectly transparent honesty. Indeed, his honesty was so transparent that it was quite impossible to conceive of him—I will not say as engaged in anything like intrigue, but as taking any but the most direct and straightforward way to his objects. His simplicity was so unaffected that he was quite the only man I have ever heard speak to a hundred people exactly as he would have spoken to one of them, which, of course, is as different as possible from the commoner practice of speaking to one man as you would speak to a hundred.

The frankness and directness that were the expression of his transparent honesty were often accompanied by a

humorous or whimsical extravagance of statement that was equally the expression of his exuberant vitality. This also often puzzled strangers, and led them to believe that the famous architect could not be a "safe" man. But this wrong impression also was very soon dispelled. In fact, the good sense, the moderation and the judicial temper that underlay this extravagance so impressed themselves upon all who came to know him that they esteemed him as an eminently safe counsellor; and it was these qualities that so very often led to the choice of him, in bodies composed not only of men of his own profession, but of men of various callings, as the presiding officer, or what in some ecclesiastical gatherings is happily called the "moderator." It was this that led him to be regarded as the *doyen* and representative of his profession before he had attained that place by seniority of years or service; this and his unselfish devotion to the interest of that profession, as was conspicuously shown in his latest years by the labor he underwent in order to have the public architecture placed on a more rational and honorable footing. To know him in person as well as in his works was to heighten one's appreciation of him, for it was to receive, behind the architect, "assurance of A MAN."

Montgomery Schuyler.





NEW BOOKS.

Épidaure, Restauration et Description des Principaux Monuments du Sanctuaire d'Asclépios Relèves et Restauration. Par Alphonse Defrasse; texte par Henri Lechat. Paris: Ancienne Maison Quentin. 1895. Small folio, pp. IV., 246. 13 plates, of which one is quadruple, one triple and five double; 78 illustrations in the text.

The sacred inclosure of Asklepios at Epidauros, on the eastern coast of the Morea, near the modern Epidavra, has been the scene of long continued researches by the Athens Archæological Society. Beginning about 1881, these excavations have been the subject of a long series of papers in Greek, French, German, English and American journals devoted to archæology. The stadion or inclosure for foot races and the theatre, both outside the sacred inclosure, have also been the subject of minute investigation. The theatre is of especial importance on account of the extraordinary preservation of the rows of seats, although the buildings connected with the stage are entirely in ruins. The present book comes to record in a permanent shape these new discoveries and many of the theories which students have formed with regard to them. It is a very handsome book of the true Parisian type, with large plates photographically reproduced by Dujardin from highly-finished drawings made in the true style of l'École des Beaux Arts and with many photographs of sculpture and other details in the text. It is printed in large type on thick paper, and is as we had to say of Mr. Havard's book on Galland, a small or middle-sized book made large. It is rich in material for the architectural student and practitioner, material both literary and in trustworthy drawings.

Messrs. Defrasse and Lechat are, the one a former *prix-de-Rome* student and an architect,

the other a former member of the French school at Athens and a lecturer of the National Faculté des Lettres. The drawings are by Mr. Defrasse, and it appears that some of them have formed a part of his *Envoi de Rome*. The preface explains how such drawings of record and restoration are required of the privileged students at the Villa Medici, and how hard it is to make permanent use of them, because of their great size and their constantly increasing numbers; and how, finally, this book is part of a serious attempt to make them useful.

The Hieron or sacred inclosure can be perfectly identified and its boundaries marked out. There are belonging to it the foundations of the propylaia or monumental gateway, which seems to have inspired but little interest in the explorers; ruins of a peripteral temple of no great size, but of admirable workmanship and easy to recognize as the shrine of the God of Healing to whom the place was sacred; ruins of a round building which is at once identified with the tholos described by Pausanias; of a long portico; of a temple of simpler plan (not peripteral) and of similar small scale; and of several buildings of later date. The stadion is outside the inclosure and has been little explored. The theatre is five hundred yards away and has been the subject of separate excavations. A small building for the storage of the sculptures discovered has been built close to the theatre and a new road has been laid out from Epidavra to Nauplia, giving easy access to the ruins, but avoiding interference with them.

A whole chapter of the text and many illustrations are devoted to the temple supposed to be that of Asklepios. It is not of novel distribution or design, a hexastyle temple with this one important peculiarity, that the columns on the

flank were only eleven in number instead of being twice as many as in front and one more that is thirteen. Nothing new is gained in information about temple roofs; the old question of lighting from above—was there any or was there not?—is left unsolved so far as these ruins are concerned. The inclosed part is unusually simple, consisting of one large room only, in the west end of which the authors think they have a right to place the chryselephantine statue described by Pausanias, and a shallow *prostasis* or vestibule. The greater part of the structure was of tufa of fine grain and solid, but it had been covered everywhere with a thin coat of the finest white stucco upon which color had been freely applied, with many delicately drawn patterns of ornament of which traces remain. The metopes were not sculptured, so far as can be judged by the fragments which remain, which appear to be abundant for purposes of judgment. The pediments, on the other hand, were filled with sculpture of pentelic marble. Judging by the places where the sculptures were found, it is evident, thinks Mr. Kavvadias, Ephor of Antiquities, and the scholar who has written the most on these discoveries, that nearly all the sculptures found belong to the western front. These seem to have represented the well-known battle of Greeks and Amazons. The fragments shown in the photographic pictures of the text are of great beauty, and they are sufficient in number to have made possible a tentative restoration of the one pediment group, but it is assumed that some of these sculptures were set upon the roof above the pediment in guise of acroterial ornaments, and this makes more doubtful the distribution of the rest. A large elevation, plate III., offers a restoration of one of the fronts, which is the east front, so far as having the vestibule and door, but the west front so far as the pediment is concerned. The text explains at length the authors' reasons for every step which they have taken in this restoration, and the reasons for the anomalous combination of the two fronts in one. An outline print, on page 55, is nearly on the same scale as the restoration and is elaborately figured. From this and from the text it appears that, with regard to the architecture proper, the one important point which is still doubtful is the exact height of the columns; but the text explains (p. 54) that the error cannot exceed a few centimetres either way. With regard to the columns a curious confirmation is noted (p. 56, note) of the theory that the drums of columns were made to fit closely by being ground together. Remains of a red mortar,

plaster or similar paste adhering to the beds show the traces of a rotary movement imparted to the upper drum. It must be mentioned also that inscriptions have been found which give very curious details concerning the ceiling, the unexpected and inexplicable outer door which must have been hung between the columns of the vestibule, and the inner door of boxwood and ivory; also the cost of materials and the rate of pay of architect and workmen.

In the temple of Asklepios, then, we have one more hexastyle peripteral Greek temple of nearly normal type, well worthy of study, as every newly found Greek building must be, but not very novel. Very different is the case with the ruins of the tholos. Here is a circular building with a ring of twenty-six Doric columns outside the wall of the *sekos* and a ring of fourteen Corinthian columns within, and no doubt can exist that it is a building of the epoch commonly assigned to it, or about 350 to 310 B. C. It is, therefore, contemporary with that building which has been supposed to be the one example of the Corinthian style in continental Greece, namely, the Choric monument of Lysicrates. The Corinthian capitals of Epidauros are, however, greatly superior to those of the Athens building, which latter it must be remembered was a little monument about seven feet in diameter, its columns, six in number, engaged in a solid wall. According to the restorations of more recent times, as well as the drawing made by James Stuart in the last century, the Athens capital is lacking in dignity and appropriateness of design considered as a supporting member; faults excusable enough in the fanciful little structure which it adorned, but so serious from another point of view that it is commonly thought useless to go back of Roman examples for the true type of the Corinthian order. Here at Epidauros, however, the order is found in perfection and easy to restore. There is one very curious incident in this exploration which must be mentioned. A Corinthian capital of marble and of the proper size for the tholos order has been found by Mr. Kavvadias carefully buried in the neighborhood of the building. This has never been finished, but the sculpture of the leafage is done with the utmost refinement; and there is this unexpected feature about it, that the leaflets of the acanthus of the lower ring have sometimes five, sometimes six, sometimes seven points, as if the designer were trying experiments in the most thorough fashion, that is on the marble itself and of the full size. Our authors give a large untouched photograph (page 115), and of this they

insist upon their view that this was a model capital, not to be used, but to be kept as a guide for the marble cutters.

In the book under consideration the tholos is restored as a superb spring house—that is, as the rich inclosure and shrine of the sacred well of Asklepios. They are led to this partly by the curious substructure which supported the flooring and partly by the evidence, which they think sufficient, that the building was practically unroofed within the ring of Corinthian columns. Some moulded courses of tufa found on the ground aid in the restoration of the building, according to this theory, by furnishing the evidence for an attic wall rising above the roof of the outer pteroma. The reader is to imagine, then, a circular colonnade of Doric columns as refined in their proportions as any known to us, and with an entablature of unusual splendor; within this the cylindrical wall of the sekos, which also rises above the colonnade and its roof in a decorative attic. Authentic or not, or, to speak more justly, whether more or less authentic, the restoration according to this scheme, which is to be seen in plate XII., will charm the architect as a new revelation of what Greek architecture of the prime could achieve.

There seems to be little doubt concerning the interior or Corinthian order, whether in detail or in general design. Moreover the ceiling of the outer pteroma and that of what may be called the inner pteroma, that is the narrow space between the sekos wall and the inner colonnade, are certainly capable of restoration and probably to be restored nearly as Mr. Defrasse has shown them (page 118). All this depends of course upon the number, size and preservation of the fragments existing. The restoration of the marble-tiled floor as a ring around a broad well-mouth is perhaps doubtful, in view of the absence of any fragments which might have belonged to the well-curb; this particular restoration follows from their assumption of a spring-house beneath and from the facts stated by Mr. Lechat that the marble tiling of the floor is known in its completeness, and was not continuous over the central portico.

It may be said here, once for all, that our authors give the reasons for every step in their restoration. It is evident that architect and writer are of one mind and that they know how to discriminate between the nearly certain and the merely probable. The absence of any flow of water now need excite no surprise in view of the earthquake so common in Greece.

The Ionic portico lying to the north of the

tholos and stretching more than two hundred feet from east to west, Mr. Defrasse restores as the sheltered sleeping place, closed on the north and open to the south, for those who came to consult the God of Healing. The building was evidently a piece of delicate and severe Ionic, and the mouldings of the bases are of singular flatness. One-half of this portico was, as our authors think, of the best Greek epoch; the other half with a substructure of the Roman time and with its details closely copied from the Greek originals. The little temple thought to be that of Artemis was hexastyle and prostyle and built with an interior order unusual in so small a structure. All the details, as seen in the fragments recovered, are of great beauty and perfect finish. There seems to have been three statues, one of the well-known "Victory" type, and the others probably Neriads mounted on sea-horses found among the ruins of this temple, and our authors place them upon the roof as acroterial statues. The propylæa was of good Doric style and well-worthy of consideration for its plan is of a wholly open portico; Doric without, Ionic within, in a way that reminds one of its Athenian prototype. Finally the theatre, however important to archæologists as the best-preserved one in Greece, offers to the architect nothing else so valuable as the Ionic order along the front of the stage and the admirable pilasters and entablature of the principal doorways. These details are the best hint at Greek domestic architecture of the decorative sort that we are likely to find. The height of the hyposthene or room under the stage was that of a common modern story, ten feet or a little more "between beams," and all these carefully designed and delicately executed columns, pilasters, door-pieces, niche-like recesses and the rest are exquisitely adapted to that small scale of the building. The architect will find some novelities here, too, in the way of mouldings and their combination.

Inigo Jones and Wren; or, The Rise and Decline of Modern Architecture in England.
By W. J. Loftie. Macmillan. 1893.

Four chapters of the eight into which this work is divided and 106 of its 270 pages are devoted to an account of architecture in England between the latter days of the Gothic style and the appearance of Inigo Jones as an architectural designer in England, about 1615. The remaining part is subdivided as follows: Chapter V., Inigo Jones, 50 pages; Chapters VI. and VII., Wren, 60 pages; Chapter VIII., the successors of Wren, 55 pages.

The whole book is devoted, all the chapters alike, to a vigorous phillipic against all other styles of building in modern use except that which the author calls Palladian. This term he applies as readily to one form of revived classic as to another; for, although he is aware (page 79) that Palladio had nothing to do with the early appearance of the classical Renaissance in England, and even that he "was probably not yet born," and although he knows of a modern "Grecian" style (p. 279) which also is not Palladian, yet we find the Elizabethan modifications of mediæval art qualified by this latter epithet. The author is not, however, to be held to this: he is aware that Palladian is a different thing from Elizabethan architecture, and says that Caius College, at Cambridge, built about 1655, is the first distinctly Palladian building in England; but he is still in trouble about that mixture of Italian classical feeling with English methods which makes up the Elizabethan style, and which we can date as from 1560 to about 1610. The great gallery of Haddon Hall has an Elizabethan wainscoting well known to the students of English architecture, whether in itself or by means of photograph, and this wainscoting is said (page 56) to show the gradual approach of the Palladian style. "Something very like a composite capital crowns each pilaster." The expression "later Palladian" occurs continually as an equivalent for the complete Italian revived classic, with "the use of the orders," as our author says in more than one place, and this appears to signify the Palladian of Palladio—that is to say, that form of the revived classic style which may be supposed to have sprung from the study of that great architect's buildings and books. Mr. Loftie seems to be feeling about for a term which will convey to his readers an idea of what he loves in architecture; the orderly and formal buildings of the later Italian styles beginning in Italy about 1525; a century after the beginning of the Renaissance. These styles, which the Italians call the *classicismo* and the *decadenza*, but never by any chance the *rinascimento*, Mr. Loftie identifies, in the first place, with the work of the two architects which form his principal subject; in the second place, with the architecture of proportion as distinguished from that of decorative detail; and in the third place, with all that is good in what he calls on his title page "Modern Architecture in England." There is, as the reader may guess, great confusion of thought throughout the book, which is written, as the author states in his preface, not by an architect nor for architects, but by one of a profession "the members of which as

a class give the most employment to architects." He is in short a clergyman who has written on art and archæology for different English periodicals, and in connection with Mr. Freeman's series of "Historic Towns"; besides his own "History of London," Westminster Abbey," etc.

Why does he call this formal architecture, suggested as it were by Jones in a part of his work, followed by Wren at a time when all the architects of Europe were following the same course two hundred years ago—a style, moreover, which was almost wholly abandoned with the beginning of the reign of Victoria, which reign is now sixty years old;—why does he call this style modern architecture? He explains in his preface that he adopts the word Palladian because the word renaissance is not sufficiently definite, and has a foreign sound, because Palladian conveys a definite idea, while "Queen Anne" has a limited, and "Italian" an unlimited meaning, and because Palladio especially represents learned or classical art in England. Here is indicated a lack of clear perception. Neither term is used in an exact or truly descriptive way, and indeed they are hard words to use or define.

There is, however, one truth which our author sees clearly and insists upon in fitting language; the truth that the Gothic revival in England has been a complete failure. When the present writer said in print and on more than one occasion twenty years ago that the Gothic revival had failed in England the assertion was met with scornful denial. It will probably not seem rash to the reader of Mr. Loftie's pages. When it became evident that the imitation of ancient styles of the Middle Ages was not leading to any living and generally recognized style among the moderns, the failure of the Gothic revival was visible to those who would look. It did not follow from the cleaning up and putting in order of ancient Gothic buildings, nor from the close imitation of them in the erection of new ones, that the Gothic style was really in the way of being revived. While one architect was building a careful study of "early English," another a church in which were combined Flemish details with the use of colored material taken from the north of Italy, a third a good solid round-arched structure which he called Norman, and a fourth a faithful imitation of Henry the Seventh's chapel at Westminster; while these imitative structures were going up, with no attempt to construct or to carve as the original builder had done, and with only here and there a scarcely recognized piece of thoughtful designing was being brought into existence, the Gothic revival could not be

said to have succeeded. It was not for the building of imitative buildings, even the most faithfully imitative of some Middle Age style, while beside them as many buildings imitative of Italian, French or German revived classic were going up, that the early Gothic revivalists worked and wrote. Mr. Loftie is right about this; the Gothic revival has failed, and he would have been right had he gone on to draw a conclusion from this failure, and had assumed that where this very earnest and zealous attempt had failed other attempts would fail, and that all this galvanizing of the dead corpses of styles of art would end in such chaos as we see all about us.

No one could have been expected to foresee this. In 1840 when the Houses of Parliament were begun, in 1850 when All Saints' Church in Margaret street, London, was begun, in 1857 or 1858 when the New Museum at Oxford was begun, there was room for hope. Had a reasonable proportion of the architects worked with the energetic good-will of Barry, with the decorative sense and proper independence within the limits of his style of Butterfield, or with the devoted belief in the future of Deane, there would have been reason for hope. A style might have grown out of such designing as either Butterworth's or Deane's. That their efforts should result in no formation of a school; that their work should pass as clever and original building, to be mentioned in guide-books, but should never work any change in other men's work, nor tell as one step in the building up of a new and universal style of architecture; that could never have been foretold.

Mr. Loftie is right, too, in insisting upon it that the great fault of modern architecture is lack of proportion. There can be no doubt that the way to make something of our business buildings, where rentable space and abundant light everywhere are the requirements, is this: to work out, in slow hours of application, a system of proportion fitted to their novel conditions. Mr. Loftie's mistake seems to be in thinking that decorative detail is in some way hostile to good proportion. The buildings which he greatly admires are certainly devoid of ornamental detail; it is also true that when their proportions are good this fact is plainly visible, because, if they have proportion or if they have it not, they have nothing else. Thus old Burlington House, in London, engraved page 247, from *Vitruvius Britannicus*, is mentioned with the praise which it partly deserves; but it is treated also as if it were, because of its proportions, thoroughly good architecture. On page

230 Sir William Chambers is quoted as having said of it 'Behind an old brick wall in Piccadilly there is, notwithstanding its faults, one of the finest pieces of architecture in Europe.' This, however, is not the case. No building can be one of the finest pieces of architecture in Europe which contains nothing but carefully arranged windows alternating with piers, columns alternating with open spaces between them and a proportion of basement, principal story and entablature with parapet. To design such a front is to produce academic architecture and nothing more. The merit of the designer is wholly in the single elevation drawn on the sheet of paper. It is a good architectural composition, but it is not good architecture nor architecture in a high sense at all. Where is the adaptation of the exterior to the plans? Where is the evidence that the plans were considered at all? Where is the evidence that any difficulties of construction were met and vanquished? Where is the evidence that the building erected as a London dwelling is in any way different from the Italian palace or palaces which it imitated?

Is it even a piece of faultless proportion? The principal story has between its two projecting wings seven large windows of equal size and equally spaced. The basement has below these seven openings, arranged of course on the same axes with them. Now the central opening of the basement is a door and is made wider than the windows of the same story, and the result is that the two piers flanking the said door are narrower than the other piers of the same story. In two ways this works badly; in the first place, it gives a huddled effect, than which nothing could be more disastrous to a Palladian front, and, in the second place, it throws the piers off the axes of the regularly spaced columns above, so that these piers seem, in the otherwise exactly spaced façade, to be unduly loaded on one side and to be in danger of sinking on that side. There is to be seen in this piece of awkwardness the penalty which attends the use of this formal style of building. It is lost—your design is lost—if the least suggestion of utility is allowed to be heard. The style to which old Burlington House belonged, to which St. Paul's in London belongs, the style in which abstract proportions are everything, and the designer does not ask how he can bend the requirements of his design to his will, but how he can ignore requirements and make the design without considering them—that style can only succeed when all matters of utility and convenience can be made to give way. It must, therefore, be used on a

colossal scale and with abundant means, or it will fail. Burlington House was small; each bay of its front was only 11 feet 6 inches between the axes; when, therefore, it was necessary to pierce one of these bays with a door, everything was thrown out of scale and the design spoilt, and yet the door was but a narrow one. Again, the windows of the principal story rise only twelve feet from the floor to their heads. Whatever the height of the apartments may be, this is inadequate; rooms lighted with such windows cannot but look petty. Again, there is no opportunity for another story upon this front. The Palladian style, as understood in England, recognizes only one story and a basement, and rightly so, for nothing can be more unfortunate than the super-imposition of story upon story when the style is treated with any richness of detail—when it is anything more than a blank wall pierced with square holes.

Strangely enough, Mr. Loftie seems to see, as is shown at the very close of his book, one of the weak sides of his beloved Palladian. He tells of "grand buildings in Pall Mall, Regent street and Regent's Park," which were favorably criticised in 1825 and which are imposing on paper, but which are not real, which "stand to architecture as scene-painting stands to landscape," and which, in short, were composed of Portland cement and the like with the capitals and mouldings cast. He tells an excellent anecdote of the notice in a guide book of a new building in the Grecian Doric style, with minute description of its details, and of his visit to the building in question. "I found an ordinary little Dis-senters' meeting house," Mr. Loftie says, and adds, "but the description was perfectly correct." We have all experienced the same thing. Here in New York we were all sent a year ago to look at the little Hall of Records because of its merit as a perfect piece of Roman Ionic. That building indeed is not built of stucco; it is, however, of the class of buildings which entirely fills the requirements of "Palladian architecture," and which has no value whatever. The use of inferior materials began with Palladio's own practice, for his stately palaces at Vicenza are chiefly of stucco; it was carried on by Wren whose vaulted roofs in his London churches are of lath and plaster hung from the framing above. It is not inconsistent with the style which is essentially and in its very nature "scene-painting" and not architecture. A building may be insignificant in size, base in its materials, devoid of constructional value, or of adaptation of means to end, uninteresting and unimpressive

and yet offer to the spectator an entirely formal and sufficient specimen of what is called Palladian design.

Architecture for General Readers. A Short Treatise on the Principles and Motives of Architectural Design, with a Historical Sketch. By H. Heathcote Statham, Fellow of the Institute of Architects; Editor of the *Builder*. With illustrations drawn by the author. Imported by Charles Scribner's Sons. 1895.

It is the London weekly journal, the original *Builder*, of which Mr. Statham is editor, and it is the Royal Institute of British Architects, of which he is a fellow; a point worth noting, since the American National Association of Architects has unfortunately adopted the English name of "Institute." Mr. Statham is an architectural draughtsman of ability, as is shown in the drawing of St. Paul's Cathedral reproduced in the book on English Cathedrals lately reviewed in these columns.* The same drawing is given as the frontispiece of the present work, and is here more agreeable to the eye than in its larger form and perhaps equally explanatory of the design. Another drawing by the author, the west front of Tewksbury Abbey, is inserted at page 201, and is a very beautiful and faithful piece of architectural reproduction. It is the more fortunate that these drawings are given, because the illustrations immediately connected with the text are not pleasing nor very intelligible.

The first thing for the reader to do is to make for himself a table of the chapters, and this will show that there is no chapter I., but instead of it a general essay headed with the title of the book. Chapter II. deals with Trabeated Architecture, or that of post and beam, wall and flat roof; Chapter III. takes up Arcuated Architecture, or that of the arch and vault and their abutments; Chapter IV. is devoted to Mouldings; Chapter V. to Ornament other than Mouldings, and Chapter VI. is entitled "Architecture in Connection with Cities and Landscape." Finally, a Historical Sketch begins at page 201 and occupies 120 pages. It will be seen that this is eminently a book for the general reader, as indeed its title asserts, and not one intended for the student. For the purpose of such a guide to knowledge and right judgment it is an excellent treatise; sensible, logical, sufficiently full in its citation of instances

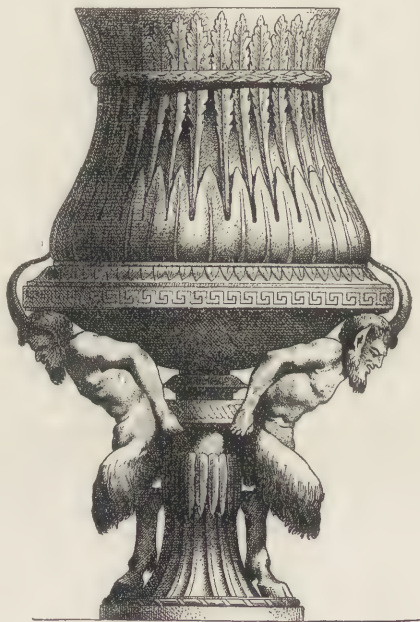
* It is a matter of regret that that drawing was not mentioned in our notice. The other drawings compared were of Gothic buildings, and this of a classical structure was therefore passed by.
R. S.

and examples, sure to direct its readers aright. The things we miss as we read it are seen, on reflection, to be the things that had to be left out of so small a book.

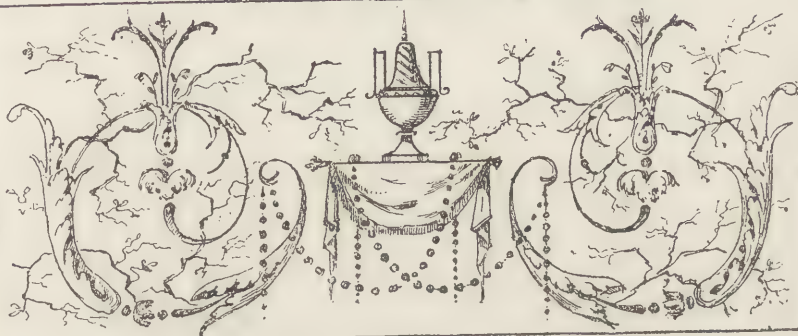
No student other than an Englishman can be expected to allow so much relative importance to English Gothic. No student of the structural history of Gothic art can fail to be surprised at the insistance on ideas of verticality and aspiration as being of great weight with the builders of the twelfth and thirteenth cen-

turies. Constructional and not sentimental influences were what governed them. And, in the too brief account of architecture since the Renaissance, one asks for more recognition of that feeling of delicacy of proportion among the parts of a building, which feeling is the good element in the existing school of modern Roman or late classical revivalists. But these are matters concerning which it is evident that different writers will hold very different views. The book before us will lead no one far astray.

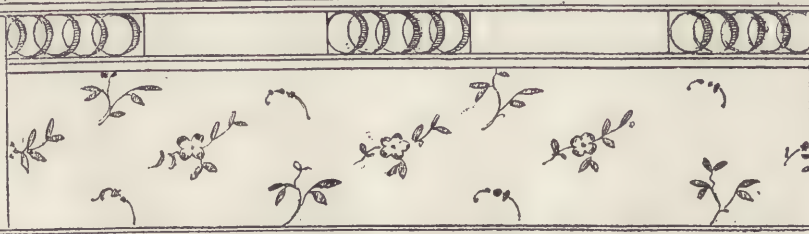
Russell Sturgis.







Technical Department.



ARTISTIC STONE CARVING.

THE work of the late Richard M. Hunt possesses an especial interest other than that arising from the quality of design. Probably no architect of his day was so little hampered in the execution of his artistic conceptions by those hard financial restrictions which tame, if they do not maim, the imagination of the ordinary practitioner of the art. He was remarkably fortunate in the fact that in all his important work the consideration of cost was one of the very last conditions to be counted with. The means at his command were usually so abundant that almost as a matter of course he obtained the highest resources of the professions, crafts and trades, which are the necessary auxiliaries of the architect. But, moreover, Mr. Hunt was a fastidious critic in all the branches of construction and decoration, and was particularly scrupulous in intrusting his designs to none but the most competent hands. There was no necessity to employ the second best or to experiment with substitutes, so that the office of the architect became in a sense one of the highest centres of the building art of the day. It is this fact which gives Mr. Hunt's work a technical value beyond its æsthetic worth and makes it an interesting study from a second point of view. It exemplifies the highest standard of craftsmanship in the United States, both in workmanship and in method.

It is, of course, clean impossible to illustrate these matters by engravings. The technical perfection of any example of the industrial arts is not to be shown in a picture, and, indeed, the higher qualities of, for instance, wood-carving or stone-carving or metal work

are rarely directly appreciated by even the intelligent but uninstructed observer. These qualities are recognized by him undoubtedly, but only in the force of the general impression which he receives. The trained artisan only can fully appreciate the great technical skill, the long preparatory practice necessary to produce some small detail, or perhaps emphasis of detail, unobtrusive in itself, but immensely telling in the total effect of the work. A great deal of the work in Mr. Hunt's buildings is as admirable on the technical side as on the æsthetic, and it is unfortunate that more cannot be done here than merely indicate some of the more notable successes which the interested reader is invited to study in the buildings themselves.

A glance at the preceding illustrations of exteriors and interiors shows a great wealth of carving in stone and wood, especially in the later and more important works of Mr. Hunt. Artistically and technically it is the finest in this country and will compare favorably with the best anywhere. Indeed, the work in the Vanderbilt residence, on Fifth avenue and Fifty-second street, inaugurated a new era of stone-carving in America, and Ellin, Kitson & Co., foot of West Twenty-fifth street, New York City, to whom this important detail of the design was intrusted, deserve special recognition for this fact, particularly as their assistance was subsequently relied upon by Mr. Hunt in all his greater operations. The order of work done by this firm is so high that it is easily typical of the very best obtainable to-day. In the Vanderbilt residence referred to they did all the fine exterior stone-

carving, as well as the carving of the main hall and staircase and of the banqueting hall. It may be well to observe that the main hall and staircase is of Caen stone and is entirely carved from floor to ceiling in the French Renaissance style. The staircase particularly is elaborate and rich, and at the time when completed far surpassed anything of a similar kind so far attempted in this country. Visitors to this sumptuous mansion need not be reminded of the beauties of the banqueting hall, one of the noblest apartments in the metropolis. The more noticeable features of this room are the wainscoting, seven feet high, of oak, the vaulted ceiling, also of oak, and the great red sandstone mantel, with its six full-sized figures. For all of these Ellin, Kitson & Co. are to be credited.

But if this be the earlier work, the reader, by turning to the illustrations of Ochre Court, the residence of Mr. Ogden Goelet at Newport, will see in the pictures of the main hall and the staircase hall good representations of some of the latest work done by this firm. Much of the finer detail is naturally lost in illustrations like these, which present rather a general view than a picture of minute particulars, but enough is shown to give the reader a good idea of the rare fineness of execution and the artistic elaboration of this work. The entire staircase hall is constructed of Caen stone all the way to the ceiling, about thirty-five feet high, the ceiling itself being of ornamental plaster splendidly enriched, as the engravings show. In the main hall all the stone, wood and plaster work was done by Ellin, Kitson & Co. A decidedly Gothic feeling pervades the work. Stone is employed for twenty feet of the height, and at the top of this, all around the hall, is what may safely be pronounced the finest piece of

wood-carving in this country. Every square inch of this superb work was produced by the firm in their shop, and it shows the high perfection which American workers in wood can attain to under the most favorable conditions.

The "Breakers," perhaps the most sumptuous of the great Newport cottages, was also, in large part, intrusted to the hands of Messrs. Ellin, Kitson & Co., and the work they have done there has received the admiration of the most critical. Their chief contributions to this palatial house are the main hall and the staircase hall. Both are carried out in Caen stone to a height of thirty-two feet. The illustrations give one an accurate and sufficient notion of the elaborate splendor of these apartments, which are unmatched in this country and recall in no unworthy way the very finest of the great show places of Europe. The fine ceilings in both the main hall and the staircase hall are worth particular attention. Some idea of the extent of the work called for in this building may be gathered from the fact that the carving and cutting done required from twelve to fifteen months for execution, and at times over two hundred men were in employment. The entrance hall of this building, wrought in stone and marble, was also the work of this firm.

Besides the Newport residences, Messrs. Ellin, Kitson & Co. did the entrance hall of the Gerry House, in New York City, and the outside stone-carving—in the hard brownstone from Rochester—in the Marquand residence, also in New York City.

This dry enumeration of details merely indicates the honorable position which this firm has taken in the development of their branch of the building craft. Their work deserves study as an "ensample" of the highest methods.

MODERN STONEWORK

NO people ever believed in their own age so heartily as we do in ours. Progress is supposed by everybody to underlie all our activities. The thing done to-day must necessarily be performed better than the thing accomplished yesterday.

This is a very comfortable assumption. It is so thoroughly accepted that any one who calls it into question is at once labeled with a bad name, and regarded as a cynic or a pessimist, or something equally odious. In the building trades, particularly, it is an article of faith that progress has been moving along with the succession of day after day. We are supposed never to have halted, never to have retrograded.

There is, of course, a great deal to create and warrant this belief. The application of mechanical power to building has made possible a great many wonderful things, all carried on right under our eyes. The adoption of iron in construction has been revolutionary. The discovery of artificial hydraulic cement, too, was a great addition to the builders' craft, and—equal to anything else—the greater pressure at which this age carries on all its work has increased both the necessities and the possibilities of construction. Indeed, there is no wonder that we all firmly believe that building science is in a very much more advanced state to-day than it has ever been before in the history of the world—the belief is supported by so large a number of facts.

There are certain directions, however, in which the reality of progress cannot be conceded unreservedly. It is doubtful, for instance, whether in all particulars, modern mason-work can advantageously be compared with the best mason-work of mediæval times, with that of the Romans or the Greeks, or with that of other great builders who preceded the Middle Ages.

For instance, to take one of the oldest pieces of masonry-work in the world, the great Pyramid of Khufu in Egypt. Recent investigators assert that the stone in this colossal structure is set with a mathematical exactness, which can be compared only to the

finest achievements of our opticians. Ever since the Parthenon received scientific study, it has been the admiration of architects for its splendid stonework, in which, as is well known, are embodied minutest subtleties of form which the ordinary eye is unable to detect unaided by instruments. The masonry of the Romans remains to this day in great quantity bearing witness to its own excellent construction. How the Gothic builders triumphed over the hazards of vaulting and other similar problems is exemplified in the great European cathedrals.

In more modern times, after the great buildings of the Renaissance, the art of the mason seems to have distinctly declined. The greatest triumphs of our own day have been achieved rather in iron construction than in mason-work. In the United States especially, the masons' craft was for a long time in a decidedly low condition. Perhaps this was natural, as the history of American building began with the carpenter and the frame house, and was almost completely in the carpenters' hands until the beginning of the present century. It was the growth of our cities about this period that brought the mason to the fore in the more general use of brick and stone. For years, however, brick was the dominant material, despite the immense wealth of stone which this country possesses in almost every section of it.

No country in the world is so rich in building stone as the United States, or possesses anything like the variety, yet, at first, and indeed almost down to the present day, strictly first-class masonry was rather an exception than a rule in the United States. Even in New York City isn't it only yesterday that builders, generally speaking, departed from the malpractice of setting stone contrary to the natural bed? The advent of the tall building, the "sky-scraper," so called, may be said to have brought in the new era of high-class masonry by not only permitting but necessitating the very highest and most scientific methods and practices.

Moreover, a class of masons has

arisen with us as different from the old order as the architect of to-day is from the old carpenter-architect of the first quarter of this century. These men follow their craft in a scientific way. They possess experience and means. They have gathered around them a body of skilled workmen who are competent to meet the most exacting demands of the architect, and one needs very little technical knowledge to be aware of how exacting these demands are. The marshaling together of the materials that enter into the construction of a large modern building may be likened for difficulty to the mobilization of an army, and in this process certainly the part which the mason plays is the most exacting. From the selection of the stone in the quarry to the placing of the final course in a building (perhaps two or even three hundred feet above the street level) skill and executive ability of a very high order are imperative. Abundant capital, of course, is necessary, and an experience which cannot fall to the lot of many men. Indeed, to-day there are only a few mason firms to whom architects can fearlessly trust the most important work they are called upon to carry out.

Among the firms that stand unquestionably in the front rank is that of James Sinclair & Company, of No. 413 East 29th street, New York City. The late Richard M. Hunt confided the stone-work in nearly all his greater designs illustrated in this magazine to this firm, which thus has the credit of adding their experience and skill to the erection of what are, perhaps, the most palatial homes built anywhere in recent years.

The work which they have performed on these buildings has received and deserves the very highest compliments. In the domestic field there is nothing to match it in this country. It was Sinclair & Company who were intrusted with the stone-work of the W. K. Vanderbilt residence, on 5th avenue and 52d street—a building which marked the new era in sumptuous town residences. The fact that a firm worked on this building is *prima facie* evidence that it enjoyed the highest reputation of the time. The firm has

continued to hold the same ever since, a fact which is sufficiently indicated by Mr. Hunt's selection of it in the construction of "The Breakers," the "Marble House" and "Ochre Court" at Newport. The stone-work in these superb palaces is unsurpassed. It represents the very highest results obtainable to-day. The "Breakers" is of buff Indiana stone, the "Marble House" of Tuckahoe marble, and "Ochre Court" of blue Indiana stone. The material was selected with the utmost care, and was chosen by Mr. Hunt to produce the highest effects of his designs.

The most important piece of work, however, that Mr. Hunt intrusted to Messrs. J. Sinclair & Company was that of Biltmore House at Asheville, N. C.—the superb château in the style of Francis the First, built for Mr. George W. Vanderbilt. This is by far the most sumptuous home built within the last quarter of a century. In size and magnificence it rivals its French prototypes. It is essentially a palace. No money was spared in its erection. The highest workmanship procurable was employed, and it must be very flattering to Messrs. J. Sinclair & Company to find they were selected above all their other competitors for this important piece of work, for in this building it is well known Mr. Hunt called to his aid none whose position and character did not entitle them to the most unreserved confidence. Biltmore House was the most important commission the architect received in the course of his career. Many consider it his *chef d'œuvre*. But however much opinion may differ upon the artistic position which this building occupied in the list of Mr. Hunt's works, no one questions that constructively, it was his most important building of a domestic character. The material used was buff Indiana stone, and for the detail of the work we refer our readers to the engravings at the commencement of this volume. This building has added greatly to the reputation of Messrs. J. Sinclair & Company. It is a notable achievement in every way, not only in the perfection of workmanship, but in the certainty and in the promptness with which it was carried out.

MARBLE WORK.

THE extent to which marble was used in interior and exterior ornamentation, as well as in actual construction by the ancients, bids fair to find its counterpart, if not its rival, in modern architecture. Nor is it to be wondered at that the ancients used marble so largely in the ornamentation of their buildings, for no stone possesses more beauty of appearance, more richness of effect and more delight to the eye than this ever beautiful mineral, delved from the earth in various lands and brought to such perfection of finish and coloring under the deft hand of the marble-worker.

The architect of our day is as deeply indebted to the use of marble in his work and design as the architect of yore. He has not been slow to perceive its value in ornamentation of every description. And in this he has been fortunate in meeting the taste of the layman who, whatever his shortcomings in knowledge of the appropriate in architecture, is ever ready to lend a willing ear to suggestions as to the use of this—the queen of all stone used in the building art.

The late Richard M. Hunt was particularly felicitous in the use of marbles, and no architect knew better than he how to use it to artistic effect. It is to be seen to advantage in many of the splendid examples of architecture which his genius created; and the reproductions shown in the illustrations in this number convey but a faint idea of the original work.

It fell to the lot of Messrs. Batterson & Eisele, of 431 Eleventh Avenue, New York City, to carry out in detail much of the work of the late Mr. Hunt in some of the finest examples of his work shown in these illustrations. To this firm he intrusted the work which he recognized as being an important factor in securing desired

effects, and in enriching the coloring and beauty of the skilfully-designed chambers in such magnificent structures as "Marble House," "The Breakers," "Biltmore" and other noble examples of architecture.

Those who have seen the interior of "Marble House" will not easily forget its splendor. The main entrance and stairs are in beautiful Sienna marble, brought to this country from the Italian mines from which the ancient sculptors secured the stone from which they chiseled their wondrous works of art. The dining-room is finished from floor to ceiling in the richest of dark pink Numidian marble brought from Africa, carved in superb life-like figures and bas-reliefs, after drawings by Mr. Hunt. Strikingly noticeable in this room are the large and beautiful monoliths of English alabaster. These huge columns and pilasters are 14 feet high and 2 feet in diameter, and Messrs. Batterson & Eisele are authority for the statement that interior columns of such proportions have never been superseded in the United States.

On leaving "Marble House," one cannot help taking a lingering glance at the exterior and its approaches, with the richly-carved basin of marble near the entrance. The remarkably fine carving in "Marble House" could only be carried out by selected and experienced workmen under skilful superintendence, the privilege of which, it may not be out of place to add, fell to Mr. John Eisele, of the firm named above.

Mr. Cornelius Vanderbilt's home, "The Breakers," occupies a prominent site on the ocean front, lined by summer palaces which has made Newport famous as a watering-place all over the world. There the use of marble is shown in almost perfect effect. The billiard-room is pronounced by critics to be the finest specimen of mosaic and marble

work in the United States, and cannot be surpassed, in modern work, in any part of Europe. The walls are finished in light green Cippolino marble, highly polished, while the floor and ceiling are finished in a rich pattern of mosaic-work. The centre panel in the ceiling is admirably executed, with its elaborately-carved frame of English alabaster, the scene portrayed being from a bathing chamber in ancient Pompeii.

No more delightful retreat could be found anywhere than the loggia in "The Breakers," where we are brought face to face with some of the richest mosaic-work in this country. For the execution of this work Messrs. Batterson & Eisele cannot receive too much praise. The mosaic ceilings, floors and tympanum, as will be observed in the illustration in this number, are in a design of Italian Renaissance. To faithfully describe the other beautiful marvels of workmanship in marble in "The Breakers" would occupy too much space, but passing mention should be made of the remarkably striking baths carved out of solid blocks of Italian statuary marble.

Some exceptionally fine examples of marble-work is to be seen at "Biltmore," and Mr. George Vanderbilt speaks with some enthusiasm of the library and breakfast-room. The former contains a large, rare, Japanese mantel, while the latter is trimmed in deep red Numidian marble, beautifully rich in color and effect. The plant-room, for tropical and other arborial growths, contains Numidian marble, Gothic capitals and bases, and there is an elaborate fountain in the centre, the basins of which were carved out of solid blocks of stone. The effect is striking, and forms a picture not easily effaced from the memory of the visitor.

Some very fine specimens of marble-work by Messrs. Batterson & Eisele

are to be found in some New York City houses, particularly in that of Mr. John Jacob Astor, on the corner of Fifth avenue and Sixty-fifth street. The grand hall and arcades of the Astor residence are in Caen stone, with self-supporting stairs in the same material, the entire work being beautifully and elaborately carved. One of the finest marble halls done by them is to be seen in the city home of Mr. Ogden Mills, on the corner of Fifth avenue and Sixty-ninth street, in which the architects' design of a self-supporting elliptical staircase of solid white Carrara marble is admirably carried into execution. Other examples of their work appears in the Lenox Library, and in the palatial residences of Mrs. Matthew Livingston and Messrs. C. Oliver Iselin, Henry G. Marquand and Sidney Webster.

The use of what we may call the "Precious" marbles is certainly destined to increase in this country in all our more elaborate buildings. The rare artistic effects to be obtained by the employment of these materials have, of course, long been well known to architects, but we may say, that it is only to-day, that the profession is beginning to employ them freely. Superb color schemes are possible with their use, and in conjunction with mosaic give inexhaustible possibilities of decoration. Messrs. Batterson & Eisele have been both pioneers and discoverers in this field. They have been most enterprising, not only in presenting the finer marbles to the attention of architects, but they have invested large sums of money in obtaining the finest stones from all over the world. They have always in stock a superb choice from all the great quarries. Their resources are so ample and their connection so complete that quicker than anyone else they can supply the most unusual needs of the architect.

STEAM HEATING.

THE architect is dependent on the services, and frequently the suggestions, of others in carrying out an important plan for the construction of a building. Problems arise in engineering, heating, ventilating and the like, and the expert is consulted as to their solution. Hence, the architect relies, in a large measure, on the able counsel of the men who are devoting their lives to the professions which are allied to architecture. To be an architect, in our day, means to possess something more than a knowledge of the styles, the necessities of an interior plan, the framing of walls, partitions, columns and beams, and the calculation of the strength of materials, as well as their carrying power and their resistance to the elements. These are perforce the subjects on which the architect of ancient and modern times required a more or less perfect knowledge.

But the exigencies of our modern day life have tended to bring forth skill in other directions. The engineer of our day—the architectural engineer, if the term may be used—is playing an important part in the erection of many of our modern buildings. The electrician, the steam-fitter and the various contractors who carry out the ideas of the architect in modern construction, perform functions which, but a half-century ago, were unthought of. What is popularly known as “modern improvements” are now indispensable in the residence, the institution and the business structure of our day, and it is impossible for the architect to possess that thorough knowledge of every branch of building necessary to carry into execution the details of his planning. Thus, he is

compelled to call in expert assistance on the various problems that do not deal with actual construction; and while it is true that the conception is his, the execution, both in detail and entirety, is left to the expert.

Let us take, for instance, the matter of the heating and ventilating of the modern building. It is not so many years ago that the simple fire-grate gave way to the open log-hearth of our ancestors. As the style of living became more luxurious among the masses, there arose a demand for heating and ventilating the home and the office by new methods. People found that wood and coal produced more or less dirt and inconvenience, and this became augmented when there came into general existence the four-story house, the five-story flat and the high office building. It was soon found that to transport coal and wood to a great height every day became both an inconvenience and an expense, and thus it came about that heating by register and steam-pipe came into existence. Then, again, the old method of ventilating by chimney or window was found to possess disadvantages in that it was either inadequate or that it was productive of colds and chills, particularly in winter. Hence, the automatic ventilation of buildings became desirable and is now in vogue all over the country.

The late Richard M. Hunt made a special study of the heating and ventilating of the buildings which he planned, particularly during the last quarter of a century of his professional career. For twenty-two years or more he had the able counsel and experience of Mr. J. D. Clarke, of 276 Water street, New York City, who holds high rank as

an engineer and who had the honor to carry out much of the important work in this direction to be found in the buildings erected from plans by the deceased architect. Some of the machinery and apparatus used was on an unusually large scale. This appears in the three palatial Vanderbilt places, "Biltmore," "The Breakers," and "Marble House;" the Goelet residence, "Ochre Court," and other prominent structures. The system adopted in most of these buildings was indirect radiation, a low-pressure plant being used.

It may be of interest to note that in "Biltmore" alone about 15,000 feet of superficial indirect heating surface is required to heat this great structure, with a boiler capacity of 300 horsepower. The temperature of each room in the building is regulated automatically, and literally miles of steam-pipes are used for connecting the radiators. The boiler-room is 100 square feet in dimension. "Biltmore" is also one of the few private residences in the country that has a steam laundry.

For the hot-water system of heating in "The Breakers" some twenty-five thousand superficial feet of heating surface was required, the plant being even more costly than at Biltmore. This is largely due to the fact that Mr. Hunt had to deal with the problem of building the boiler-house outside of the residence proper. The boilers adjoin the lodge and are located underground some three hundred and sixty feet distant from the residence itself, the heat being transmitted through a conduit nine feet high and six feet wide.

Ochre Court is another example of advanced work in heating and ventilating, though of a less extensive character, Mr. Goelet having spared neither

pains nor expense to secure as perfect a system as could be devised for automatically regulating the draught and temperature throughout the entire building.

The first important edifice in which Mr. Hunt used a low pressure, indirect steam-heating apparatus was the Lenox Library on 5th avenue and 70th street, New York City. This was some twenty years ago. In this he had the able assistance of Mr. Clarke. Other buildings in which this system was subsequently used by Mr. Hunt were: The Academic Building, West Point; the Gymnasium, West Point; the Naval Observatory, Washington; the Fogg Art Museum, Cambridge; the Library, Princeton; the Marquand Chapel, Princeton; the country home of Governor Morton, at Rhinecliff-on-Hudson; the Home for Aged and Indigent Women, Amsterdam avenue and 104th street, and the Guernsey Building, at 160 and 162 Broadway, New York, and the residences in the metropolis of Messrs. Ogden Mills, Harry G. Marquand, W. K. Vanderbilt, Columbus O'Donnell Iselin, Adrian Iselin, Jr., and others of prominence.

The steam-heating and ventilating apparatus in all these buildings were planned by Mr. Clarke and erected under his personal supervision. Mr. Hunt's ideas in heating and ventilating at times attained to an elaborateness which was in keeping with the desire of his clients to secure the most perfect system that could be put into operation, and Mr. Clarke consequently had the advantage of practically unlimited powers, which, coupled with Mr. Hunt's complete confidence in his capacity, enabled him to lay down some of the most extensive heating and ventilating house plants ever erected, one or two of them occupying years of thought and labor in the execution.

PORTLAND CEMENT.

IN the early part of this century, while many eminent engineers, in England, France and Germany, were striving to produce an artificial water cement, one Joseph Aspdin, of Leeds, England, obtained a patent, dated October 21, 1824, for the manufacture of what he termed Portland cement.

There were many other patents obtained at and about this time, but, while all these patentees and other experimenters were apparently satisfied with an artificial hydraulic lime, Aspdin went beyond and gave the grand finish to the whole by his discovery of the increased temperature of the kiln and consequent high specific gravity of the cement.

These various efforts were not attended with immediate beneficial results to those who had given so much time to the question, as the cement appears to have attracted but little notice for some considerable time after its invention, and the Roman (natural) cement continued for a number of years to be preferred and readily obtained at a higher price, but within the past thirty years the great importance of Portland cement as a building material has been demonstrated to such an extent that its manufacture has grown to vast proportions, and it has a market in all quarters of the world.

Previous to the year 1870 the quantity of Portland cement imported into the United States was very small and was held at so high a price as to prevent its coming into general use. It was vastly superior, however, to the native cements, and the organization of several artificial stone companies about that year created a large and steady demand for the better article, which brought new importers into the field and caused a reduction in prices.

From 1870 to 1876, practically all importations were from England. This fact gave rise to the general impression that no true Portland cement was manufactured anywhere else, but, after 1876, there was a gradual encroachment from Germany, and the best known English cements, which had ob-

tained an extended reputation, principally through being the first in the field, were obliged to gradually succumb to the superiority of the German cement until, at present, more than half of all the importations are from Germany.

One of the causes for the superiority of the German over the English cements is the fact that German engineers and architects recognize the injustice of making arbitrary specifications and then accepting the offer of the lowest bidder under them, as is done in England. The Germans take into consideration the actual value of the cement for making mortar or concrete, and that, together with its price per barrel, determines which is the cheapest and best for use.

Whenever the conditions in building are such as to necessitate the use of a better hydraulic cement than the natural cements, produced in this country, careful architects and engineers demand the use of the best imported Portland cement. In following that rule, Mr. Hunt selected for use in all his work the cement made by the Alsen's Portland Cement Works, Hamburg, Germany, and known as the "Alsen brand."*

Notwithstanding the high reputation of the cement made by this Company, Mr. Hunt required that all deliveries should be carefully tested, and the wisdom of his selection has been confirmed by the fact that the most rigid inspection, such as was made when he was building the United States Naval Observatory at Washington, for instance, has failed to discover a single barrel that did not come up to the high standard set by the manufacturers, and in no case has any other cement that has come under the notice of his office proved to be of equal merit. Many thousands of barrels have been used in the various buildings which are represented in this magazine. The quantity of this cement used in building some of the private residences and in laying out the grounds around them equals that used

* Of which the United States agency is located at No 143 Liberty street, New York City.

in many of our large public works. In the house and grounds of Mr. George Vanderbilt, at Biltmore, N. C., there were six thousand barrels of Alsen's cement consumed in the building of the house, and in the residence of Cornelius Vanderbilt, "The Breakers," at Newport, R. I., over ten thousand barrels were used. This is not surprising, when we consider the great number of uses to which a cement of this character can be put. At Biltmore, for instance, it was used for the foundations of the house and the lower walls, the cellar floors, walks, fountain basins and coping for garden walls, making a stone superior to natural stone and at much less cost.

The small difference in cost between a high-grade Portland cement, like "Alsen's" and the cheaper grades, is not worth considering, when the safety and permanence of the work is considered. Furthermore, it has been proved that a cement like "Alsen's" is actually more economical than cheaper brands. An architect feels that he must have a Portland cement that is safe at all times and in all conditions and which is absolutely uniform. Aside from these points where cement work is exposed to the eye, as in walls, curbs, architectural mouldings and castings, etc., the beauty of work done with cement like "Alsen's" is greatly superior to anything that can be done with lower grades of Portland cement. Where stuccoing is required certain kinds of work are frequently accomplished and effects produced which would be quite impossible with most other Portland cements. This is largely owing to the fatty nature of the cement and its adhesive qualities, so different from the lean and hungry character of other cements which cannot be used for stuccoing, except they are used with but very little admixture of sand.

When Portland cement is to be used in the foundations of very heavy buildings, such as the "Manhattan Life Building," on Broadway, New York, it is of the highest importance that a cement of great strength and uniformity is employed. Hence, for filling the pneumatic caissons of such buildings as above the "Alsen's" cement was

used, the crushing strength of this brand having been found to be 10,000 pounds per square inch in twenty-eight days.

The exercise of exceeding care in all the departments of manufacture, insures that uniformity in quality that is most essential in Portland cement. The result of the experience of several years of these careful methods is seen in the building up of the largest trade of any cement manufactory in the world, and the production of the best Portland cement made.

It is very finely ground, insuring an ability to carry a maximum quantity of sand with the least loss of strength. While not a quick-setting cement, it attains a great strength in a short time, say twenty-four hours, enabling masonry work to be pushed with expedition and at the same time with perfect safety.

It will develop a greater degree of strength when mixed with sand than any other cement made, which proves it to be of greater practical value.

The most dangerous feature in Portland cement is the presence of too large a percentage of magnesia or an excess of free lime, showing cracks and distortions in the testing pats, the briquettes and an expansion in actual work that must be fatal to the soundness and reliability of the work. In this particular, Alsen's cement is absolutely safe and reliable. In no instance has it ever shown any indication of these dangerous features when subjected to tests to discover them. This is, unquestionably, the result of careful selection of raw materials and care in manufacture. It is of good color, making it eminently well adapted for making artificial stone.

When mixed with sand for mortar, it is not short nor brittle, but works smoothly under the trowel.

It is put up in good packages, enabling deliveries to be made with least chance of damage or loss of contents.

In short, the advantages claimed for Alsen's cement over any other Portland cement is owing to its greater strength and absolute reliability. It is not only the safest Portland cement to use, but at the same time the most economical.

THE BUILDERS OF BILTMORE.

IT is doubtful whether, either in the Old World or New, a builder has ever erected a nobler residential edifice than the Southern home of Mr. George Vanderbilt. Selected from a number of his compeers for the performance of such a great work, he would be unworthy of his calling had he not taken pleasure in every hour of his task, and pride in its accomplishment. Biltmore is a monument to the architect by whom it was designed, and next to the architect it is a monument to the skill of the mason who carried into existence that design.

Not during the three generations of the Weekes family of builders had any of its members ever dreamed of erecting such a superb and costly seat. Selected to be the masons of Mr. Vanderbilt's home, Messrs. D. C. Weekes & Son began their labors in the summer of 1890, and, after five years of continuous effort, Biltmore to-day stands out against the skies, overlooking the beautiful Blue Ridge Mountains, seen at a great distance, owing to its elevation of 2,200 feet above sea level. No wonder that the traveler goes out of his way hundreds of miles to view this magnificent creation of man's brains and handiwork.

The builders of Biltmore, having undertaken the task, they relinquished all other contracts, and, from the commencement of the foundations until this day, Mr. H. C. Weekes, of the firm already named, devoted himself solely to the erection of the structure, the conditions necessitating his being in the saddle during a large part of the time of his superintendence.

It was thought, at the beginning, that a quarry on the Vanderbilt estate might supply the stone necessary for the building, and Mr. Weekes opened up his quarry. But the stone—gneiss rock—was found of utility in the foundations only, and Indiana limestone was used for the main superstructure, some twenty thousand feet of face-rock being used. Some of the pieces of carved stone set in place by the masons were very large, one in the

retaining wall, for instance, weighing over three tons.

To describe at length the detail of construction of this retaining wall would require more space than can here be given thereto. Suffice it to say that this wall is 333 feet long and that it has a base varying from seventeen and a-half feet thick at the base to two feet in thickness at the top. It was started at different thicknesses, according as the grade raised or lowered, and it was underlaid with a concrete foundation twenty feet in width.

Beyond this great retaining wall appears the esplanade, 333 feet in length and 75 feet in width. In the centre of this esplanade is a beautiful fountain, some thirty feet in diameter.

Entering the main floor from the terrace, the visitor is at once struck with the beauty of the winter garden, which is built in octagon form, and in size is 60 feet square. From the winter garden the best view is obtained of the main floor. All the principal rooms are seen from its many large windows in almost kaleidoscope completeness. To the west is the *salon*, 40 feet in length. To the north of the garden and the corridors surrounding it, is the banquet hall, and west of this hall is the breakfast-room, beyond which is the main kitchen.

The banquet hall is notable not only for its beauty of interior, but also for its size and construction. It is 72 feet long, 42 feet wide and 70 feet high, with one span and a dome ceiling. At the western end appears three massive triple fireplaces, of almost gigantic proportions. At the eastern end there is an organ loft and a balcony for musicians.

Another feature of the main floor is the living hall, 60x30 in size. This hall runs up to the top floor. Immediately west of the hallway under the main hall is the music-room. There is also a swimming pool 60 feet long and 30 feet wide, adjoining which are needle baths, sprays and the like.

North of the living hall is the tapestry gallery. Three large panels have been built in the walls to receive valuable tapestries to be placed there by

Mr. Vanderbilt. At one side of the gallery are two large stone fireplaces, in sixteenth century decoration.

To the south of the gallery, which is 75 feet long, the library is entered. This handsome room is 60 feet long and 40 feet wide. It has a single span, and one of the girders weighs over *fourteen tons*. On top of this enormous girder is a chimney which runs to the roof to a height of 21 feet. It will thus be observed that the builders had some interesting problems to solve during the construction of Biltmore.

Emerging from the library we come on the Library Terrace, a plaza 35 feet wide, which leads down to the south terrace, which is over 300 feet long. On this terrace is a bowling green.

The *porte-cochère* is worthy of a passing glance. It adjoins the gun-room and billiard-room, to the east of the banquet hall.

Ascending to the upper floors we find a vast succession of sleeping chambers and some twenty bath-rooms. Mr. Hunt was very happy in the arrangement of these floors, each guest, in whatever room he may be placed, having access to a bath-room.

Emerging once more into the open, and winding our way to the south of the esplanade, we find a hundred-foot terrace, containing large basins for aquatic plants. To the west end of this terrace is a tennis court, and there are similar courts to the east and south of the terrace.

Near the house itself is the stable, which is of stone and which contains accommodation for about forty horses.

It is not generally known that Biltmore stands in the midst of some sixty to seventy thousand acres of ground, and that the total extent of Mr. Vanderbilt's holdings in the vicinity aggregates about 100,000 acres. This gives more than ample room for the necessary game preserves, shooting boxes, trout streams, etc., that may be desired by the owner of such a domain. The lands in the neighborhood of the houses, however, are treated to some landscape effects, designed by Frederick Law Olmstead, the landscape architect. These effects are produced in a measure by calling in the work of the mason in the way

of constructing bridges across streams. There is also a big dam, 125 feet long and 30 feet high, beyond which is a beautiful lake, about one-quarter of a mile in length, which could be utilized for rowing and fishing. There is a dam about one-quarter of a mile above the main dam, so built that in case of a freshet the water will fall into a trap, which is perforated, and when the trap becomes overweighted sufficiently heavily it lifts a gate, opening on a sluiceway, so as to allow the water to pass out into the lake. The reason for this arrangement is that the soil is light and the lake would otherwise be filled in a year or two, owing to the freshets in this mountainous region in the southwest section of North Carolina.

Among the general features of Biltmore the following items may be of popular interest :

Its extreme length is 375 feet, and its extreme width, from the *porte-cochère* to the westerly end of the breakfast-room and music-room, 192 feet. Still, its beautiful proportions seem to diminish its size.

It has about one hundred rooms in all. It contains three elevators, and it is said that eighty servants will be required when it is fully occupied.

Over 11,000,000 bricks were used in the construction, and they were made out of clay on the estate. Of course there was the stone in addition.

The description given above merely outlines, in a very faint manner, the work done by Messrs. Weekes & Son at Biltmore. That they did all this work with as much satisfaction to Richard M. Hunt as to the owner of this estate, and that they handled large numbers of workmen engaged at various points of the grounds with such skill that from foundation to completion no hitch occurred, is a lasting credit to their ability. Not only did they carry through the mason-work, but they contracted for the plastering and the ornamental work in the plastering, at one time having about three hundred and fifty men employed.

To have erected Biltmore alone is a task that might well be pointed to as the one single achievement of a lifetime.

MACHINE-MADE MORTAR.

THERE are no materials used in the construction of a building that are of more importance than the mortar and plaster. Their function is equal to that performed by any other material that enters into the fabric of the edifice. With the uninitiated they practically cut a small figure in the conception of a building. People would put many other things before them which, really, are not comparable to them in importance. Wood-work and trim they would certainly rank ahead of them. The architect or the practical man, however, makes a very different classification. He not only knows that of the physical bulk of the building plaster is one of the largest elements, and that habitableness, stability and even sanitariness of a structure, depend in no small measure upon the careful selection of good plaster.

Plaster is almost as old as house-building. It has been an important material in the builders' craft from the earliest days of the Egyptians. Yet, curiously, the march of improvement which has affected almost all other materials has not touched plaster until quite recently. Even to this day much of the mortar and plaster used is manufactured very much as the Romans manufactured it, only with much less care and skill than these great builders gave to the process. The value of machine methods in stone-cutting, wood-working of all kinds, in the manufacture of iron, etc., is fully acknowledged. People easily take in the certainty, the reliability of machine work, and appreciate its greater cheapness, and the immense economy which it makes possible in the matters of time and cost. Even the hod-carrier has been replaced by machinery. Nevertheless, builders are content to prosecute the making of mortar and plaster by the old tedious antiquated methods. The United States Mortar Supply Company was the first to bring about the necessary innovation and improvement, and the late Mr. Richard M. Hunt was the first

architect in this country to introduce the use of machine-made mortar into the actual work of buildings. He recognized at once the superior qualities and merits of the new article, and made the first step towards demonstrating what experience has since proven and established beyond question, that the plastering work of large and costly buildings can be completed in less time, at much smaller expense, and with much greater certainty by the use of machine-made mortar than is possible with the old kind of material. He demonstrated, in one step, its valuable advantages, its economy, sanitariness, and not only used it subsequently in all the great buildings which he created, but he recommended it cordially. To-day the products of the United States Mortar Supply Company are almost invariably used in all the finer and most costly buildings in New York City.

In a sense there is nothing experimental about machine-made mortar. The improvement did not involve the use of unknown or untried material. It necessitated no new combinations; nothing, in short, that entailed any risk whatsoever. What the company undertook was, by the careful selection of the old ingredients, aided by the more perfect combination of them by machinery, to do away with the unreliability, the tediousness, the failures which were never entirely avoided by the old method of manufacture, even when carried on with the utmost care. The rapidity with which the machine-made article won the unqualified favor of practical men demonstrated its advantages, so that even those who had a leaning towards antiquity and preferred traditional value to actual results were convinced. Progressive architects like Mr. Hunt, and progressive builders, fell into line at once, and the fact now stands as a matter of history that in all the greater buildings recently erected in New York the products of the United States Mortar Supply Company are used exclusively.

TILING AND FIREPLACES.

THE grandeur of "Biltmore," both in exterior and interior, has been so largely dwelt upon that it may be appropriate to say a few words about the marvellously fine work in the way of tiling, mantels, wainscoting, etc., which adorns the interior of that magnificent structure.

An evidence of the extensiveness of this work is shown in the fact that The Bradley & Currier Company, of New York City, which had the contract for a large part of this work, were eight months in completing the tiling for the bath-rooms, toilet-rooms and hallways, the swimming-tank, fireplaces, etc., put up by them in "Biltmore."

Although it might be presumed that the bath-rooms are most elaborate in decoration, the visitor will find them devoid of gorgeousness. The wainscoting is of the simplest character; there is no embossing, no coloring, no ornamentation. It consists simply of 6-inch squares of enameled cream tile, with moulded sanitary bases and caps, the floors being of white vitreous tile of a variety of sizes.

The lounging-room is a striking piece of art in tile. It is, indeed, tiled to the ceiling. The girders and posts also are covered in ivory-white tile, with a moulded sanitary base and cap.

The kitchen walls, laundry and drying-rooms, pastry kitchens and cook's pantry are all wainscoted to a height of over 5 feet, the very inlets in the window-cases being also tiled, the effect produced being very rich and unusual. The floors, too, are of American tiles. The kitchens are in ivory tile, and tile surrounds the ranges, the entire rooms, including the returns and doorways, being tiled 5 feet high.

A fine contrast between wood and tile is to be seen in the butler's pantry at "Biltmore." This is a large-sized chamber, where the walls beyond the wood-work are tiled to the ceiling. The effect of this contrast, where the work is so superb in character, can only be realized by a visit to this compartment.

The lower halls or corridors of "Biltmore" present a very pretty and

attractive appearance. The floors are set in Bock and Hydraulic tile of red and buff colors, making an exceptionally handsome finish.

An evidence of the costliness of the master of "Biltmore" is shown in the fact that all the servants' bath-rooms and toilet-rooms—and they are quite numerous—are equal in finish and workmanship to the private rooms of a similar character.

In addition to the above work in tile, all of which was done by The Bradley & Currier Company, the carriage porch at the main entrance is a feature, the flooring being laid with heavy French corrugated tile. The basement and sub-basement of the structure are also tiled, and these, in addition to the tiling on the first, second, third and fourth floors produces an ocean of tiling, which covers acres and acres in area, and comprises the largest contract of its kind ever executed in a private residence.

Tile-work of a similar character to that seen in "Biltmore" was placed by the company named in the handsome residence on the southeast corner of Fifth avenue and Sixty-second street, New York, owned by Mrs. Josephine Schmid. Vast quantities of beautiful tile-work are here to be seen in the kitchens and servants' rooms, and in the bath-rooms on the second, third and fourth floors. The kitchens are tiled to the ceiling in enameled cream tiles, 6x6 in size, with moulded sanitary bases. The bath-rooms are wainscoted 6 feet 6 inches high with 6x6 cream enameled tiles, while the floors are in 3-inch hexagon white, vitreous tiles, with sanitary bases and moulded caps.

A glance is merely given above at the work accomplished by The Bradley & Currier Company in the way of tiling. Examples of their fine cabinet-work are seen in the homes of some of the best people in New York. Their extensive warerooms, on Hudson and Spring streets, present an almost bewildering array of superb mantels and fireplaces of original design and workmanship, and some exquisite effects in antique are to be seen there.



THE HEATING OF BUILDINGS.



DROP of twenty degrees in the average temperature in twenty-four hours is apt to raise in the mind of each householder the question as to whether or not he has made a wise choice as to the heating apparatus of his new house; whether or not he is to have as much trouble as he had last winter in his old house, or what he shall do with the house that is going to be the new house shortly; each one having an interest in the question of more or less immediate effect; with the suburban householder, in fact, this is about the period of exchanging confidences, laughing over Mr. Bunner's story in *Puck*, and thinking that, after all, there is many a true word spoken in jest.

In all considerations of the problem we shall be compelled to take into account not alone the question of heating, but also that of ventilation, since the true problem that confronts each one of us is to introduce into each room in which we are a quantity of air that shall supply the needs of all of its inmates for both heat and life, remove the air which has served its purpose, introducing the fresh air in such a location as to cause no discomfort, and at such a temperature as to make the atmosphere that we are sen-

sible of, agreeable. Some may object that ventilation has no business in the heating problem; but when we consider that every house, no matter how carefully it is built, cannot be made absolutely air-tight, and that in the average house, the usual normal change of air in the room amounts to from one-half up to as high as one change of air per hour, and that this air must find a vent somewhere, it seems to be rational to make a proper provision for heating this air which leaks in, in spite of us, and for removing it when it becomes vitiated, along with the other air; this is especially the case where the expense of the heating apparatus bears quite a large percentage to the total cost of the house: but where the amount of discomfort due to a lack of ventilation, especially in times of illness, is almost incalculable and could be avoided by a small outlay and proper planning at the beginning.

Our programme then shall be to state briefly some of the points which should be considered in the double problem of heating and ventilating within practicable limits, of the various classes of buildings in such a way as to be interesting to the professional, and instructive to the layman.

Now there are, in the first place, a few general truths to be remembered. These are: (a) That air moving at a

velocity of four feet or more per second feels cold to the skin if its temperature is lower than 90 degrees, and as a consequence we must be careful how, in ball-rooms and other places, we admit the fresh air which is necessary to maintain the temperature at a reasonable limit, where it can strike on persons in evening dress. (b) Warmed air has a considerable capacity for moisture, and will therefore cause considerable discomfort to a person breathing it, before its temperature has been reduced by mixing in a room, and as a consequence should not be discharged anywhere near the head of a bed, or where it can flow over the bed directly or parallel with the bed, as in either case its effect will be unpleasant. (c) The bodily heat of a person is of considerable amount, and where numbers are gathered will have a very marked effect on the temperature of a room. (d) In almost every room considerable quantities of air leak in or filter in, amounting on an average to about one change of air in each hour and twenty minutes. (e) Wherever a difference of temperature exists, a transfer of heat is constantly going on from the higher temperature to the lower temperature, and this transfer is very much accelerated if air currents pass over either of the surfaces. (f) In all cases time is an important element. (g) Heat is simply a form or manifestation of energy, or an indication that work is being done.

Now buildings to be heated may be broadly divided into certain classes, and these we shall take up in their order, discussing the proper method to pursue for each one.

The moderate-sized brick or frame dwelling of the summer resort, town or village of about 1,500 square feet in area or less, constitutes probably the largest class of the isolated dwelling with which we have to deal in this country. These cannot be more rationally heated than by one or more hot-air furnaces, using either coal, wood, gas or electricity as the source of heat. The best way of setting such a furnace is to provide a room in the cellar about 10 feet square, with a large opening to the outer air on any aspect but the

south; preferably the opening should be to the north. This room acts as a supply and filtering chamber, and from it the air for the furnace should be drawn. The duct to the furnace should be taken out from near the top, then dropped down along the side wall and into the furnace at the bottom; in the event of its being exposed to strong wind currents deflecting partitions may be placed in it so as to check them somewhat, increase the travel of the air, and prevent it from flowing more rapidly through the furnace than it should, and the lead to the furnace should be provided with a swinging damper which can be readily manipulated from the butler's pantry, the hall coat closet or some convenient place on the upper floor. The furnace may be either of the portable type or brick-set. For the larger classes of houses the brick-set is perhaps desirable, but in the greater number of cases the portable type is preferable by reason of the fact that it is more easily cleaned, radiates a certain amount of heat into the cellar, warming the floors of the principal rooms, and a slight change in its location can be accomplished without the great expense entailed in moving a brick-set furnace, if it is found necessary. The question of make should be decided by the following general conditions: (a) All internal passages should be easily accessible for cleaning, whenever wood or coal is used, as any soot or dirt collecting on the inner surfaces is sure to affect its heating capacity. (b) The joints should be so designed that it is easier to make them right than to make them wrong, and so that they will remain tight of themselves. (c) The smoke passages should be long, and about of uniform size throughout. (d) The grate should be of the simple grid-iron type, with a central dumping portion. There should be a little hole above it in front to reach through the ash door, so as to remove clinkers in case of need, and a small sifting grate below to sift the ashes that fall from the main grate. (e) The fire-pot should be wide rather than deep. Gas should only be burned in a furnace designed especially for its use, and is to

be recommended in many cases for its simplicity, cleanliness and economy. Electricity is at times very desirable but should only be used under the direction of an expert. The furnace should be of ample capacity; say the fire-pot 42 inches in diameter for a house two and a-half stories high, 1,200 square feet of area, and it should be placed generally a little northwest of the centre of the house, with 10-inch round smoke pipe connecting to an 8x12 smoke flue. If there is a good draught or a tile-lined flue is used 8x8 will do at a pinch, but 8x12 is very much better. If the house has its greatest length parallel with the prevailing wind, the furnace should be placed nearer to the windward than to the leeward side, and if cold storms are likely to come from a direction opposite to that to which the prevailing winds blow in the winter time, then the main furnace should be reduced a little in size and a smaller furnace placed at the opposite end of the house, the one from which the cold storms are expected, so as to convey the heat over there; thus in the vicinity of New York City a long house facing the south should have a furnace on the westerly side of the centre line, say the westerly end of the middle third and a supplemental furnace of smaller size near the easterly end of the house. In times of ordinary cold weather, with the winds from the west and northwest, the house will be comfortably heated with the one furnace; in times of easterly storms, and in times of extremely cold weather, the supplementary furnace will be needed as well. This will effect a considerable economy in the cost for coal, and simplicity in the handling of the furnace. All the flues should of course have double connections, so that one furnace can be used for the entire duty.

The hot-air should be led from the top of the furnace to the bottom of the various vertical flues in round pipes with easy bends where changes in direction are necessary; all of the pipes being covered either with 1 inch of hair felt and then covered again with canvas, or else made double; the preference being for the hair felt and canvas

covering. They should also be given a rise from the furnace to the bottom of the flue of as much as practicable, but certainly not less than $\frac{1}{4}$ inch to the foot; the vertical flues should be laid out with one or more to each room; single where running in interior partitions, except where they are running behind fine decorations, in which case they should be double and double in exterior walls. The position of the flue is largely determined by the position of the hot-air register in the room; since, owing to the exigencies of the framing, it is necessary that they should run practically in a vertical line. There are three generally accepted positions for the register: first, in the floor; second, in the side wall near the floor; third, in the side wall near the ceiling.

In general the greatest satisfaction will be obtained if the register in the main hall, the only one where there is but one, is placed in the floor near the entrance door; if there are others, place two near the entrance door, either in the floor or in the side wall, as the preference may be, place one in the floor at some point where the regular usage of the hall will not make it necessary to walk over it; a third if need be in the side wall. For all other rooms throughout, a register should be placed in the side walls just above the base, being placed in the transverse partition near to the outside walls. Generally, good architects place the furniture in the rooms as they are designing them, so that knowledge may be obtained to avoid placing a register behind a place needed for a bureau, a wash-stand or chair placed so as to catch a pretty view, also keeping it clear of discharging anywhere near the bed. In case no transverse partition is available, then the flue may be placed in the outside wall, made double and its area increased about 10 per cent. The required flue area should be calculated on two changes per hour, about 4 feet per second velocity in flue for the first floor, 7 feet per second for the second floor, 9 feet per second for the third floor, and an area of register corresponding in square inches to the area of the flue

taken from some convenient catalogue. The bath-room register should be made wide and low, and should be placed near the ceiling, but no other register should be placed very close to the ceiling, since the current of warm air there will cause a discoloration by the settlement of dust. If the bath-room register cannot be placed high up it should be put in the floor as far from the bathtub as possible. All of the rooms should have a ventilating flue of the same size as the hot-air flue, placed on the interior wall near the floor, and as nearly opposite the hot-air inlet as is practicable, so that there shall be a current of warm air from the register around through the rooms and into the ventilating flue. The ventilating flue should be carried up in the attic space and discharge into an unused room, or into a chimney of area equal to one-half the combined area of all the flues so as to maintain a constant suction on it.

Larger dwellings should be heated on the same general lines, except that the air used for the heating of the dwelling should be itself heated by means of radiators containing either hot water or steam, with one stack of radiators for each vertical flue hung so that there shall be at least 4 feet of vertical cold air supply underneath the stack, and at least 4 feet of flue above it, with direct radiators in the hall in sequestered places, and in the butler's pantry for use with the plate warmer.

In the larger dwellings care should be taken to place the hot-air registers at such positions in the side walls that the velocity of the entering air need not exceed 4 feet per second, that there shall not be a very great volume entering at any one point, and that it shall not come out in such a location as to flow over the shoulders of persons in evening dress. The large rooms, salons, parlors, reception-rooms and dining-rooms should be provided with means of tempering the air by permitting a portion of the fresh air supply to flow around the heating stack, thus mixing with the heated air and cooling it; this is necessary because the air of a room which requires to be admitted at a temperature of 95 degrees when the

room is empty will have to be reduced probably to 50 degrees when the room is full of people in order to maintain the general temperature at 70. The use of tempered air, however, should only be attempted where automatic regulation is had, or where there is an exceptionally intelligent man in charge of the plant. The air should be heated by the use of hot water run under a pressure of ten to fifteen pounds per square inch. The air supply should be based on two changes per hour in all reception-rooms and the like, and one and a-half changes per hour in all bedrooms with the velocity in the flues as heretofore given. The form of boiler to be used with hot water depends largely on circumstances, and should be purchased under guarantee that it will heat a given number of pounds of water through a stated number of degrees with a bright fire, the water being circulated by the boiler from a cold barrel to a hot one, both placed above its level, the cold water being maintained at a constant level in the cold water barrel and the amount determined by meter. Locate the boiler wherever it is most convenient, due regard being had for the necessity of carrying pipes at an even grade from and to it, and for the amount of coal which it is necessary to supply it with in the larger houses. To avoid liability to breakdowns in the larger houses there should be two boilers, each equal to the duty of heating the house to 70 degrees when the external temperature is 20 degrees, and there is a strong north-east wind blowing. The supply of fresh air to the heating stacks should be from a central chamber similar to that noted for the hot-air furnace.

In churches, if there are galleries around the side walls, the heating should be by hot-air, the flues discharging at about 6 feet above the floor level or vertically in the window sills so as to flow up along the glass, thus meeting and checking the cool downward current. There should be flues at intervals of about 20 to 25 feet on both levels, making provision for 10 cubic feet of air per minute per sitting. The air should be heated by means of a low pressure steam appa-

ratus with a radiator placed at the bottom of each flue, whenever it is possible to accomplish it. The radiator should be made in two sections so as to temper the heat of the air. There should be direct radiation in the vestibules and entrance and in the organ case, but not near any of the pipes. There should be exhaust openings equaling in capacity 50 per cent of the aggregate area of the hot-air openings, in or near the centre of the church, connected with an uptake chimney which should contain a steam coil so as to create a draught therein. The surface of the steam coil should be made about 10 per cent of the aggregate area of the coils used for heating the body of the church.

Where there are no galleries there should be double sash placed at all openings, small discharging flues placed in the sill and larger ones discharging from 8 to 10 feet above the floor line in the side walls, and there should be ventilation the same as before described.

Where churches of very large seating capacity are to be considered and especially where the floor slopes, they should be handled the same as a theatre.

In all cases of church heating the radiation losses should be carefully figured by means of the usually accepted formula in use by the German Government, and the amount of heat required to make them up added to the amount of heat required to warm the entering air from zero to 70 degrees, and sufficient capacity should be provided for in the boilers to make them good.

Each boiler should be calculated to be of sufficient capacity to supply the heat units required to heat from 20 degrees up to 70 degrees, and cross connections made, so that either can be used in case of need. For this purpose no boiler will prove as generally satisfactory as the ordinary horizontal return tubular boiler. It should be understood that under no conditions is it possible to warm a church satisfactorily by means of direct radiation as inexpensively as the method above outlined. It is possible to heat by direct

radiation where a single loop is placed under every seat and a hot-water circulation is used, but in this case no ventilation of any kind is possible and the results are likely to be far from satisfactory.

In the manipulation of such a plant the person having it in charge must keep constantly in mind the fact that the temperature of the entering air immediately after the services begin must be gradually reduced, so that, in about fifteen minutes' time, instead of the air entering at 90 degrees or thereabouts, it should enter at from 50 to 60. It is also necessary in designing to guard against the current of air flowing down along the exterior wall which will produce precisely the same effect as a draft, and which is exceedingly annoying for a distance out from the wall of about 6 feet, and some means should be taken either to render these currents agreeable or to break them up.

For the heating of theatres the fan system is the only practicable one, and the best arrangement is made when the fans are driven by electric motors, using the same voltage as is used for the lights, thus making a constant load on the electric light engine, using a larger size of engine than would be otherwise justifiable, requiring less attention of generators, and giving a higher steam efficiency for the engines. The exhaust steam from the engine supplemented with such live steam as may be necessary should be led through one large heating chamber, through which air should be forced by one fan on the basis of 10 cubic feet of air per minute for each seat in the theatre. There should be another fan discharging air untempered or cold air into a system of flues parallel with the hot-air flues equal to 10 cubic feet per sitting per minute.

The heating system should be divided into sections or subdivisions, corresponding with the natural subdivisions of the theatre, into orchestra chairs, orchestra circle, dress circle, balcony, etc., and a separate duct should run up supplying a series of small flues so as to discharge the air under every second or third seat, through high reg-

isters under the gallery or in the front of the gallery, with an entering velocity of not to exceed 4 feet per second. At the base of this duct, a junction should be effected between the hot air and cold air by means of a swinging damper controlled with a small series wound electric motor, with a double field winding, with the three wires required to operate the motor carried up to a central position in the section to be heated. Then, if the motion of the valve is made very slow by means of a proper reducing mechanism in connection with the motor, an attendant can regulate the mixture of hot and cold air so that the air entering under the seat shall always be maintained at the proper temperature to keep the temperature that people are sensible of at the desired point, maintaining the flow of air undiminished. The halls, corridors, lobbies and everything on the stage side of the proscenium arch should be heated with direct radiation. In the flies and in the roof space there should be strong ventilating fans exhausting the air from the theatre, but in each case the fans should be less in capacity than the forcing fan in the cellar, so that there shall not be a tendency to create strong indraughts whenever a door is opened.

The method of heat regulation by means of electric motors, as above noted, can also be accomplished when desired automatically, with great satisfaction, although so far as I know it has never been done precisely in this form, yet there are many cases where motors have been operated at this distance with absolute satisfaction, and there is no mechanical or other reason why it should not give equal satisfaction in this case.

Stores have always presented an exceedingly difficult problem, mainly because they were very rarely built in the beginning to be what they eventually developed, and as a consequence it was impracticable to obtain the space necessary for the heating plant.

For small stores, hot air, either as mentioned for the larger class of dwellings or for the smaller class of churches, is the proper thing.

For the very large stores the thickness of the flooring should be increased, say 12 inches, and a complete system of horizontal flues carried around in this space. A portion of them being used for discharging fresh air at the proper temperature through the ceiling into the rooms to be heated and the other portion to be used for the removal of foul air at the floor level. Each department should be provided with its own riser; the air should be warmed by means of exhaust steam in one large central coil and forced through the store by means of a fan run by a steam engine, so arranged as to give a very wide range in speed, since there are times when the flow of air must be very greatly increased in order to keep the store in a proper condition. The exhaust system should also be handled by means of a steam fan. Direct radiation should be used in the toilet with exhaust flues and fans for removing the foul air, and direct radiation should also be used in and around the vestibules; in general there should be one exhaust and one heating outlet for each 200 square feet of floor area, but better results would be secured by putting one for each 150 square feet.

In factories and in mercantile buildings where floors are divided up into large lofts, either a pressure system may be installed blowing air in from a single large fan after having previously warmed it over a single large heating stack; but a more practicable arrangement is to run the exhaust pipe up to the roof, and just below the roof put in a reducing valve and a horizontal system of distribution pipes with risers running down, supplying coils on the one pipe system.

The amount of radiation required should be ascertained by calculation by taking the number of heat units transmitted and allowing for the heating of one change of air per hour, one-half the required surface being hung around the exterior wall at the ceiling and the other half at the floor level, dividing the coils each into two parts so as to regulate in a measure the amount of steam admitted. The risers should be put in on an average of say 30 feet apart so as to cover the whole length

of exterior wall; the return water or water of condensation should be collected at the bottom and returned by means of an automatically controlled pump into the boiler, the pump discharging through a feed water heater. Exhaust steam should be used entirely, but provision should be made to supplement with live steam where necessary.

Office buildings should be divided for heating purposes into two sections; one for the usual corporation offices which occupy the lower floors, and which should be indirect on the fan system, and the other, in the halls, toilets and all of the upper offices should be direct on the one-pipe system, tapping off from the exhaust riser at the ceiling of the highest story, and dropping down, allowing one riser for each pair of windows, and putting in a small radiator in front of each window. If a radiator of the flue type is used, extra heating and ventilation can be effected by making a connection underneath the window sill with the outer air, putting a dust screen of ample size in, and putting in a box base to the flue radiator; this will work with great satisfaction on a one-pipe system and will give very perfect ventilation in the offices, as has been demonstrated with a few radiators during the past three winters.

For apartment houses there should be a system of individual risers for each apartment, using a hot-water circulation, or else there should be a gas hot-water heater used, one for each apartment, the heater being located in the servant's hall or kitchen, where the amount of heat which is radiated, which is naturally small, will be of service rather than the reverse.

The matter of automatic heat control is one of great interest, especially where the attempt is made to introduce large volumes of fresh air at the desired temperature, or where the intelligent householder has to confront the problem of the unintelligent servant. It can be accomplished in some one of the following ways: (a) By mingling hot and cold air automatically by means of slow motion valve motors

and thermostats, one for each room.

(b) By using quick motion valve motors and thermostats for each room, sending alternate gusts of hot and cold air through the flues, depending on their mingling to a sufficient extent to avoid inconvenience. (c) By using a quick motion valve motor and thermostat for each flue, alternately admitting and closing off the hot air so that the amount of heat admitted to the room is that needed to keep it at the desired temperature. (d) By regulating the combustion by controlling the damper through a thermostat from some central point, which should be subdivided further into *e* and *f* as below mentioned. (e) Controlling the damper of a hot-air furnace burning wood or coal by means of a thermostat, the damper being alternately either wide open and tightly closed or (f) moving slowly, it being preferable to run with the quick-speed motor and have the damper either wide open or tight shut. (g) By using a slow motion motor in connection with the thermostat, controlling the admission valve of a gas hot air furnace, thus regulating the amount of heat to the requirements of the house to be heated, which can be very effectively done by means of a slow-speed motor. (h) By the use of a high-speed motor regulating the admission of gas to a water heater, throwing it entirely on or off as the water rises above or falls below the desired temperature, or by using a high-speed motor to completely open or completely close the draught of the water-heating or steam-heating furnace, as the case may be.

In deciding on the merits of a heat regulating apparatus, it should be borne in mind, first, that the greater the simplicity of the mechanism the less liability there is for its getting out of order and the more certain is its action. Second, that since it is required to regulate within a couple of degrees the thermostat should be of extreme sensitiveness, that is to say, it should present a very large area of contact for the air to pass over an exceedingly small mass, if it depends on the difference in expansion of two metals, while if it depends on the

operation of one metal changing with the temperature while the other remains constant, one metal should be a very thin ribbon presenting a very large area and small mass, while the other metal should be in the form of a rod presenting a very small area and large mass. No other form of thermostat can possibly be as sensitive as one of this sort. Then again the contact points should be protected from dust, since the arc of their travel is a very small one, and particles of dust lodging on the contact points would

seriously interfere with satisfactory operation.

The subject is of too large a scope to treat except in the most general way within the limits of a magazine article. To each rule there are necessarily exceptions, most of the methods given are concurred in by the best engineers, but where not so universally accepted there are the best of reasons for the statements made, and no harm can come from following the advice, when it is put into execution by competent engineers.

George Hill.



ADVICE TO ARCHITECTS—HEATING BY GAS.

PERFECT house heating, like every other problem the solution of which is necessary to comfort in domestic life, is a matter of discarding the disagreeable features while retaining and enlarging the agreeable ones. It is amazing how much thought and effort, sometimes intelligent, but oftener not, has been directed to simplifying the domestic machinery, and also surprising to find that the conduct of a household is still a very complex undertaking embarrassed by innumerable annoying details in spite of improved construction, sanitary plumbing, electrical appliances and other forms of special construction in which the progress has been steady and marked. No branch of this vital matter has left so much to be desired as that of heating, which has hitherto defied all the efforts made for its solution on lines placing the most advanced methods within the reach of all classes. Indirect steam or hot-water heating is the most successful of all heating systems from the purely scientific point of view, but the cost of the necessary plant has restricted its benefits to isolated cases. The disadvantage of the system most popularly employed, that of the coal furnace, is the imperfect control it allows of the heat generated, and the annoyances and discomforts that arise from its use, and in handling the material from which it is obtained.

These considerations have directed scientific inquiry to the consideration of gas as a fuel, the desideratum being a heating agency that can be turned on and off as easily as the light produced from the same source, but without the employment of an open fire in a room. The peculiar adaptability of gas as a fuel has been widely appreciated in late years, and the satisfactory results obtained by its use, even in extravagant and crude forms, has naturally impelled scientific and practical effort to the construction of devices for a perfect combustion of gas and intelligent action in radiatory and kindred requisites. This effort has been so successful as to make it almost certain that apparatus for heating air and water by artificial

gas, as supplied in our cities, will find a place in all our buildings, which aim to be perfect in their appointments.

One of the most satisfactory in all respects of these devices is the gas furnace of The Vulcan Gas Heating Company, 19 West 42d street, New York, of which a sectional drawing is shown herewith. This furnace, described in a pamphlet recently issued, is no mere experiment. It originated on scientific lines and has been worked out practically in every refinement and adjustment. It has expert endorsement and the approval of a number of people who found it to respond to all the requirements of the severity of this climate last winter, a fact that is unanswerable testimony to its efficiency.

From an examination of the drawings it will readily be seen that all the advantages of the more expensive indirect steam apparatus are secured and the same ends practically reached. The flues designed for connection with the coal furnace in new buildings or those existing when alterations are contemplated, can be utilized in the installation of a Vulcan Gas Furnace; and by this simple operation a perfect system of indirect heating accomplished.

When hot water heating is called for in new construction or when the circulating plant is already in place, the gas hot water heater is as readily adjusted and the flexible gas fuel applied. In cases where supplementary apparatus is required the device has been found in practice admirably adapted for the purpose.

It is difficult to realize that the required heat for an entire dwelling can be secured in a moment's time with practically no more effort than that of lighting a match, that such heat may be increased, diminished or dispensed with at will. That no dirt, dust, obnoxious gas, foul air and burnt out atmosphere can enter the dwelling and that the complete rescue of the cellar space of the house, now too frequently hideous in its appearance and repulsive to all fastidious or

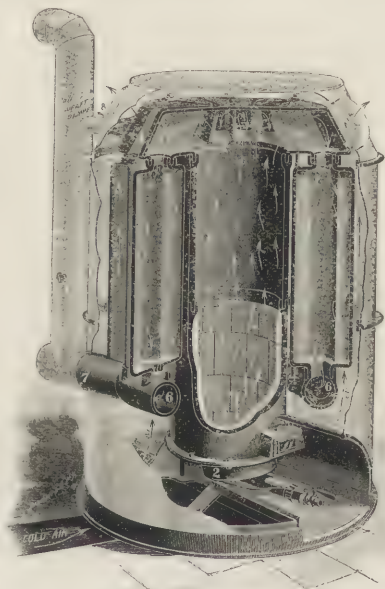
neatly disposed persons, can be accomplished. What can be done with the cellar apartment of a house can be readily surmised when it is realized that it can and should be as cleanly and wholesome as any other portion of the building.

By means of a thermostat installed in any part of the house, the degree of heat is instantly regulated when the temperature rises above or falls below a certain point, the consumption of gas in the furnace being at once checked or increased as may be necessary. The thermostat, however, is not a necessary appendage. Hand regulation from a convenient point in any part of the house or at the furnace itself has given most satisfactory results.

For heating large spaces—churches, schools, halls, stores, etc.—where a certain amount of heat is wanted at once and for a given time, this apparatus would appear to have been especially created. The facility with which it can be operated and the celerity with which all conditions can be met makes its installation in such edifices almost mandatory. In such places its perfect security against fire is a valuable feature. On the closing of the doors upon the retiring assemblage, the source of heat can be extinguished and the building be left with safety.

In explanation of the illustration it may be said that the Vulcan Gas Furnace has an outer shell of galvanized-iron from which the orifices lead to the hot-air ducts. The heater proper consists of a central brick-lined flue with a circular gas burner at the base. This flue or combustion chamber extends to the top of the furnace, the fire-brick running about half way up its walls. At the top it meets and connects with a crown or dome of cast-iron in one piece. This dome is without joints or bolts, and is deeply slotted, the slots forming passageways for circulation. The dome rests on a series of ten vertical, corrugated, radiators, each slot communicating with a corresponding radiator, and the radiator in turn connecting at the base with a circular hollow collector, or outlet ring, by means of which the products of combustion can thus freely pass to a chimney and thence to the outer

air, leaving the furnace at a temperature high enough only to secure their free movement and low enough to preclude all danger of conflagration. The dome is solidly and hermetically connected with the supporting columns, and the radiators or columns fit with equal exactness into the outlet ring. In this way, no products of combustion can enter into the air that is heated and supplied to the house. The air that goes through the house passes over the exterior of the heater, and inside the galvanized shell, on its way to the service pipes, and takes up heat from the cast-iron, fresh air being drawn in as fast as the heated and therefore lighter air has passed on for use and made room for it.



Hot Air Furnace.

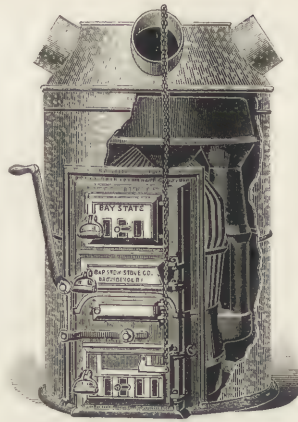
The Vulcan Hot Water Heater is constructed upon similar principles. The same burner is used in each device, and the course of the gas and the movement of the water is identical with that of the gas and air in the hot air furnace. The practical value of these heaters has secured for them prompt recognition, as evinced by the number which have been recently placed in many of the finest residences in the metropolis.

BAY STATE HEATERS.

WHENEVER we desire anything affecting the health or comfort, to what do we turn to for it? Why, to experience of course. Is an architect suggested to build a house: What has he done? is the first question of the would-be builder. When the house is built what is then the first requisite to make it habitable—the heater, is it not? That being so the owner is face to face with one of the most important questions in his domestic economy. Surely this is a case where experience is required if ever there is one.

Of course, experience of the right kind is desired. Some do nothing but experiment with their own failures and cheerfully endow the world as far as they can reach it with discomfort. But that is not the experience meant, which is successful experience, and of this in the matter of house-heating there are few if any who have a better right to boast, not that they are given to boasting, than the Barstow Stove Company, of Providence, Boston and New York. The Barstows have been making stoves and furnaces for nearly sixty years, beginning with the old system which heated one or two rooms. They have kept up with the progress of the times and the demands of a people rapidly growing rich, for more comfort and greater perfection in their home appointments. Now the reputation of the Company as manufacturers of stoves and fine castings is literally world-wide.

The Barstow Furnace has the fewest joints possible, and they are subject to equal expansion, thus rendering it perfectly gas-tight. It contains an oscillating dumper and is furnished with an upright shaker, so that not only can the clinker and ashes be easily and quickly removed, but the operation does not require any stooping. A dust damper secures cleanliness and can be also used for checking and regulating the fire. The ash-pit has an ash-sifting grate and is very large and deep. The openings for the cold air through the base rings are unusually large, and the furnace stands very low, allowing it to be set in low cellars and yet give a good elevation to the hot-air pipes. The arrangement of the flues of this



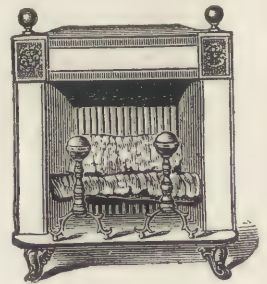
Bay State Portable Furnace.

most important conditions is that the size of the radiator is in exact proportion to the capacity of the fire-pot; the result of this is that the processes of combustion fill the flues, and no part of the radiation is lost. There are besides non-corrosive door hinges, vapor pans, etc.

This furnace embodies all the improvements that have been made in heating apparatus since the first Barstow Furnace was placed upon the market.

The prevailing craze for antique furniture has created an enormous demand for the Bay State Franklin, which is an open, portable fire-place of antique design.

The Barstow Stove Company makes and sells also every kind and size of



The Bay State Franklin.

kitchen range and parlor grate. Their complete line comprises cast-iron, steel-plate and wrought-iron furnaces, portable and brick-set ranges, office and parlor stoves, fireplace heaters, tailors' laundry and gas stoves. On any point of heating or cooking the Company is ready to furnish full information, and may be addressed either at Providence, R. I., No. 56 Union street, Boston, Mass., or at No. 228 Water street, New York.

furnace is such that the heat impinges equally on all sides of the radiator, so that all the hot-air pipes, if properly arranged, get an equal amount of heat, no one point being hotter than the other.

One of the

THE WORK OF THE GENERAL CONTRACTOR.

SOME day when the history of American Architecture, during the past quarter of a century, comes to be written, a very interesting chapter will be the one that exhibits the development of the relationship between the architect and the several professions and crafts which aid him in his work.

The architect, himself, as is well-known, was at one time the master builder. He performed all the functions in the work of construction and design which are now allotted to a score of different hands.

The profession of architecture, however, has of course, come under the operation of the law of evolution, and this law necessitates, in the course of upward development, what scientists term "differentiation." This may be translated into plainer language as a making of differences—a creation of a number of parts acting in unison, in place of single individuality or organism performing for itself all the necessary activities.

For instance, under primitive conditions, the cobbler makes every part of a shoe, but in the process of development the making of each separate part falls into different hands, until finally nothing remains for him to do but to gather and put together the several pieces. So one by one in the course of years, the master builder or the architect has been deprived of his once multifarious occupations.

How far this process has been carried, few recognize to-day. Of course, long ago, the architect ceased to be directly concerned in any part of the work of pure construction. The mason, the stone carver, the carpenter, have emerged and separated themselves completely from the architect. But the process has been carried much beyond the mechanical crafts. It is said to-day that there are very few architects who are even personally competent to design on thoroughly scientific lines the iron-work of their larger buildings. Indeed the engineer is in a mild revolt against the architect, asserting that he, the engineer, has become the chief

factor in the construction of modern buildings, and that it is *he*, not the architect, who is the master mind.

Also, in plumbing and ventilation, the architect's authority is no longer co-ordinate with that of the specialist in these matters. Electricity, we know, has become so intricate a science and a science that moves so rapidly that it is completely the work of one man's whole time to keep himself abreast of progress. Even in matters connected with the actual work of design, there is a notable tendency for the architect to seek advice and assistance from specialists, as, for instance, in terra cotta ornamentation, and so forth.

This process of subdivision is one the end of which apparently is not yet reached, but must continue until, if the simile be permitted, the architect like the cobbler becomes merely an assembler of parts—an artistic assembler, of course,—who groups into an orderly arrangement a multitude of details according to a forordained æsthetic design.

In mechanical and technical matters, this subdivision is already fairly complete. We may say it is complete, for even in iron construction and sanitation, the majority of architects, save in their smaller buildings, rely upon expert advice. Our larger buildings are successful to-day almost in proportion to the subdivision of labor which the architect has permitted.

It is needless to point out that a successful building must have other qualifications than good design and good construction. A large number of the edifices erected in these times of ours have a financial function to perform. They are intended, not only to house people comfortably and healthfully, but to earn money for their proprietors.

Now, the financial success of a building is very closely related with what we may call the financiering of the work of construction. It is not enough that the architect who has a given sum to spend shall get his build-

ing put up within the prescribed amount. It is not even enough that he shall establish certain standards for the performance of his work. It is well known that the same specifications in different hands do not always secure precisely the same result.

It is at this point that the experience, resources, reputation of an expert comes in. We mean the general contractor, the expert who assumes for the architect what is really the work of financiering the building, allotting the contracts, spending the money. Just as it is impossible for the architect to be equivalent to the specialist in electricity, so is it impossible for the architect to possess the thorough knowledge and the close relationships with the building material markets that the great general contractor possesses. The latter, so to speak, lives in the market. His daily affairs are in constant touch with it. He is centred in the midst of affairs which are at best only occasional matters with the architect. It is the possession of these advantages which gives the general contractor his importance in the building world and makes him an important factor in the construction of all our larger buildings.

The late Mr. Richard M. Hunt was one of the quickest to recognize the tendency of the times, and was ever ready to adopt all the many assistances which modern development places at the disposal of the architect. In most matters he was a modern of moderns. He objected to all circuitous ways, and his office, it has been said, represented in every particular the best practices of the period. More than that, he gathered round him the best craftsmen of the day. Mr. Hunt was always free to acknowledge the great assistance which he received from those who necessarily were called to his aid. Indeed no small measure of his success were due to the excellent assistance which he received.

When Mr. Hunt was entrusted with the great Newport buildings, illustrated in this number, his choice of those who were to carry out his designs was particularly scrupulous and careful. The selection which he made of a general contractor was especially exact. In

confiding the construction of these notable structures to Mr. C. Everett Clark, of 166 Devonshire street, Boston, he selected a builder of national renown, whose experience and resources have scarcely an equal in this country. Mr. Clark's position is an undisputed one, and if to-day the great Newport cottages are models throughout in material used and technical skill employed, the result must be in some large measure credited to Mr. Clark.

A vigorous examination of these buildings discloses scarcely a single particular in which any improvement could be possible. They are a delight to the expert craftsman. We know of no buildings to-day which are comparable to them, and the amount of skill and labor involved in their construction can be estimated exactly only by the expert. In elaborateness and wealth of detail they are beyond comparison with almost any other domestic buildings in this country. Something of their richness and sumptuousness is shown in our illustrations.

Mr. Clark was the general contractor not only of "The Breakers," the residence of Mr. Cornelius Vanderbilt, but also of "Marble House," the residence of Mrs. W. K. Vanderbilt, "Ochre Court," the home of Mr. Ogden Goelet, and "Belcourt," which belongs to Mr. Oliver H. P. Belmont. He was also the general contractor for Mr. John Jacob Astor's New York house, on Fifth avenue. Professor Shield's house and Mr. Busk's house, both at Newport, and both illustrated in this number. Mr. Clark also did the remodeling of ex-Governor George P. Wetmore's house.

In short, as a result of his long experience, Mr. Hunt confided practically all of his later and greater work to the charge of Mr. Clark, with results which were unqualifiedly satisfactory both to architect and owners, and to all who are interested in the higher development of the builders' craft. We do not speak here of the less notable work which Mr. Clark has done, or even of the many important commissions which he has obtained from other leading architects. He is one of the busiest builders of the day.

PUBLISHER'S ANNOUNCEMENTS.

ELECTRIC ELEVATORS.

THEIR SPECIAL FITNESS IN THE MODERN OFFICE BUILDING.

EVERY engineer knows that the fewer the number of well-proportioned power units, the more alike they are, the freer the interchangeability, and the greater the extent to which any one unit can be utilized, the better the system for power generation, no matter what its character.

There is no longer any question that the modern office building shall be lighted electrically. If on a sufficient scale, then it is often more economical to run a private plant than to take current from a central station, especially if the conditions of office rental are such that light must be furnished by the owner of the building.

If an electric lighting plant is put in and a hydraulic system of elevators is used, there are two distinct classes of power generation.

If, however, electric elevators be adopted, there need be but one class.

The best modern practice makes a three-unit direct-connected engine and dynamo plant the best for lighting a building. There is an empirical relation between the number of lights required in a building as ordinarily designed and the elevator service.

When in addition to the lighting service such a building adopts electric elevators, it is not now necessary that it shall add an independent generating plant. All that is required is that its three units should be somewhat increased in size, that their mains shall all be taken to a common switchboard with 2-way switches, and every engine and dynamo thus made interchangeable on either the lighting or elevator circuit, and at times both can be run from the same engine and dynamo; so that instead of five or six units, some water and some electric, the entire generating plant is reduced to three units, each of which is interchangeable, and one of which is almost always in reserve.

This system is that advocated by the Sprague Electric Elevator Company, the makers of the multiple sheave electric elevator which some two years ago was installed in the Postal Telegraph

Building, New York City, and which, now that its safety and efficiency have been demonstrated, is making a most remarkable industrial progress.

This is shown by typical buildings, many of which have adopted the electric elevator after the most searching tests and investigations. Among these are:

The Astor residences, the Edison Electric Illuminating Company's station, the Ahrens Building, the Gerken Building, the J. T. Williams Office Building, the Manhattan Hotel, the new 21-story Commercial Cable Building, and the Young Men's Christian Association Building, of New York; the Merchants' National Bank and the Johns Hopkins University, of Baltimore; the Globe Building, Boston; the Parrott Building, San Francisco; the City Hall and Court House, Minneapolis; the Guaranty Building, Buffalo; the Walton Hotel, of Philadelphia; the Union Trust and Mabley Buildings, of Detroit; the State Mutual Assurance Co., of Worcester, and the Canada Life Assurance Co. of Montreal.

These buildings are among the finest now under construction in this country, and the architects are among the most prominent. Several of the buildings are from sixteen to twenty-one stories in height, have from two to fifteen elevators each, and they are complete with every modern improvement.

The rapidity of the adoption of electric elevators has been almost a surprise, even to the Sprague Company, as well equipped as they are. Their shops, which are of the most modern type, are electrically operated day and night, and it has become necessary to double their size and capacity as soon as possible.

The Company has adopted the plan of supplying alternative layouts for single and double deck machines, and for complete installations, comprising not only passenger, but freight elevators and sidewalk lifts, to meet all exigencies, whenever architects submit their basement plans. They have proven of the utmost utility, and can be gotten by addressing the

SPRAGUE ELECTRIC ELEVATOR COMPANY,
Postal Telegraph Building, 253 Broadway, New York City.



THE ARCHITECT AND THE ENGINEER.

BEHIND the architectural effects which mark the artist's skill lies a sphere in which the ingenuity of the engineer is taxed to meet the developments of modern necessities. Light, heat, power, ventilation and refrigeration must be provided in quantity and quality unknown in the past. With increasing demands, available space becomes relatively contracted, while mechanical equipment grows more complicated, and were it not for the rapid improvements involving simplification of design, the demands of to-day could not be practically met.

The engineering profession offers its services to the Architect, ranging from professional advice to the performance of contracts, but the real service that an engineering concern can give depends chiefly upon the degree of responsibility it can assume in executing work based upon its own professional advice.

A feature peculiar to American work is that the best engineering has developed about certain classes of apparatus as nuclei, not by intent, but because warranted by the apparatus and because it was found profitable.

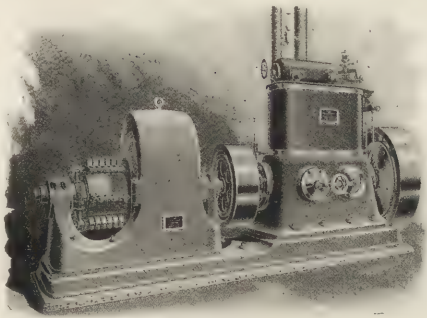
Among engineering concerns whose work in amount, character and range covers sufficient time to warrant review we have selected Westinghouse, Church, Kerr & Co., and would briefly mention the character of their specialties.

They were doubtless the first to practically combine contracting with professional work, because of the growing requirement that the engineer should bear the responsibility of the execution of

his designs. Their work has extended into many fields, all closely linked with steam engineering and all more or less within the requirements of architects. It may be said of them more than of any other engineers that they have always been by common consent admitted to occupy a foremost position in the creating of new things or the adoption of new methods, and to follow what may be termed radical methods conducted in a conservative manner. The Architect, whose work is so largely creative, understands the significance of such engineering. They were among the pioneers in high speed engine work before the days when such practice was standardized and were the chief, perhaps the only, advocates of sub-division of power. When greater economy was demanded in high speed engines, they in conjunction with other Westinghouse interests were the first to produce Compound Engines of simple design and suitable for common use. The requirement for Compound Engines to render economical service non-condensing and under variable loads was met, and indeed is still met, exclusively from the same source.

When direct connection of engines and dynamos for better service and reduction of space began to be seriously discussed, they were already thus furnishing them in sizes large and small and with a patented method of elastic connection not yet equalled.

When soft coal was being burned wastefully, with obnoxious smoke, and imported Mechanical Stokers were found insufficient for American fuels,



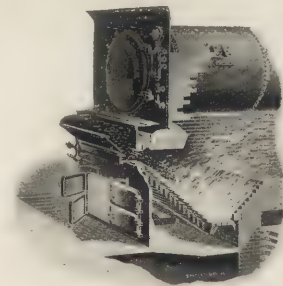
Efficiency and compactness.

they brought out a type of furnace which has become extensively used in many localities and which has practically become the standard by which others are judged.

The difficulties which beset the obtaining of suitable boiler draft and the inconvenience of constructing large chimneys have been mastered through the adoption of slow-running exhaust fans. It is true that the capacity of the fans for such work introduced no new engineering feature, yet until they undertook the responsibility of thus constructing the actual plant, it was not a part of engineering practice. With economizers to utilize the waste heat of combustion the design is now known by the name they gave it—"Mechanical Draft and Economizer System."

After water of condensation in steam

pipes had long been tolerated, with attending losses and accidents to steam machinery, sometimes removed by complicated or insufficient means, but more often submitted to as a necessary

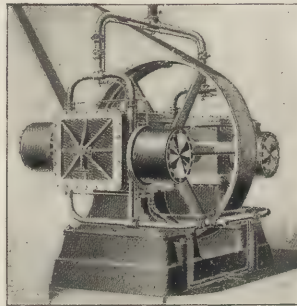


Economy and cleanliness.

evil, they brought out the simple Steam Loop, which, without valves or moving parts, restores the water to the boilers, and a thousand systems in operation testify to its merits.

The Art of Refrigeration was short

of its possibilities, especially in high-class work and in the production of clear, wholesome ice. Giving to this the same class of attention that marked previous work, they have provided a superior Ammonia Compressor, in large and small sizes, for belt connection from engines or electric motors, sectional ammonia condensers requiring a minimum water supply compatible with the use of city water, which with the highest class of steel fittings of their own manufacture form a system suited to the demand. In ice-making they control exclusively the Dry Plate and Block systems yielding "Diamond Ice," and with means of adapting the combination of ice-making and refrigeration, whereby clear, pure ice can be produced in small or moderate quantity as an adjunct to a refrigerating plant.



Convenience and reliability.

While free as engineers to use any apparatus, the especial advantage of connection with the works building Westinghouse Engines and the Westinghouse Electrical interests, and owning shops, building mechanical stokers and refrigerating apparatus, exclusively controlling patents on steam loop and Diamond ice systems, their position is perhaps unique among engineers. With ample force to execute contracts and a reliable base of supplies, they undertake to advise freely, to meet engineering requirements without regard to conventionalities, and to emphasize the advice by that definiteness which has meaning only when part of contract obligations. If such advice is not wholly disinterested it is at least interested in assuring successful results.

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THE CRANE ELEVATOR COMPANY has been an important factor in the development of the Elevator industry from the time when the Elevator, itself a most crude and rudimentary apparatus, was still a luxury provided occasionally by ambitious and adventurous owners of buildings, until now, when a first-class building is inconceivable without an elaborate and extensive elevator equipment. In fact the modern business building, hotel and apartment house would never have been conceived without the pioneer work of these daring building owners and the intelligent and progressive enterprise of the great firms of Elevator Builders of our country, among whom the CRANE ELEVATOR COMPANY has always occupied a leading position.

This Company found the Steam Elevator Engine a noisy, crude and unreliable mechanism and developed it to its present position, where it still holds its own in competition with the hydraulic and electric elevators. It then took the germ of the modern Hydraulic Elevators from English practice, where it had been used only for lifting heavy loads at low speeds, and developed the unsurpassable types of Hydraulic Elevator Engines, with which the name of CRANE is identified. And now with the advent of the electric current as a motive power, it is again in the van with an Electric Elevator Engine far more compact, simple and direct in design and construction, and hence more economical in operation than the machines of its most pretentious rivals, and at the same time as smooth and steady of motion and as positive of control as the best Hydraulic Elevators with which the elevator-using public is familiar.

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The CRANE ELEVATOR COMPANY

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Desirous of achieving still greater success and of rendering still more valuable service to the building public, the CRANE ELEVATOR COMPANY has induced Mr. Dankmar Adler, whose success as an architect has been so closely identified with that of the gigantic machinery plants which have been erected under the professional care of his late firm, Adler & Sullivan, to abandon the general practice of his profession for the purpose of entering its counsels and serving it as Consulting Architect.

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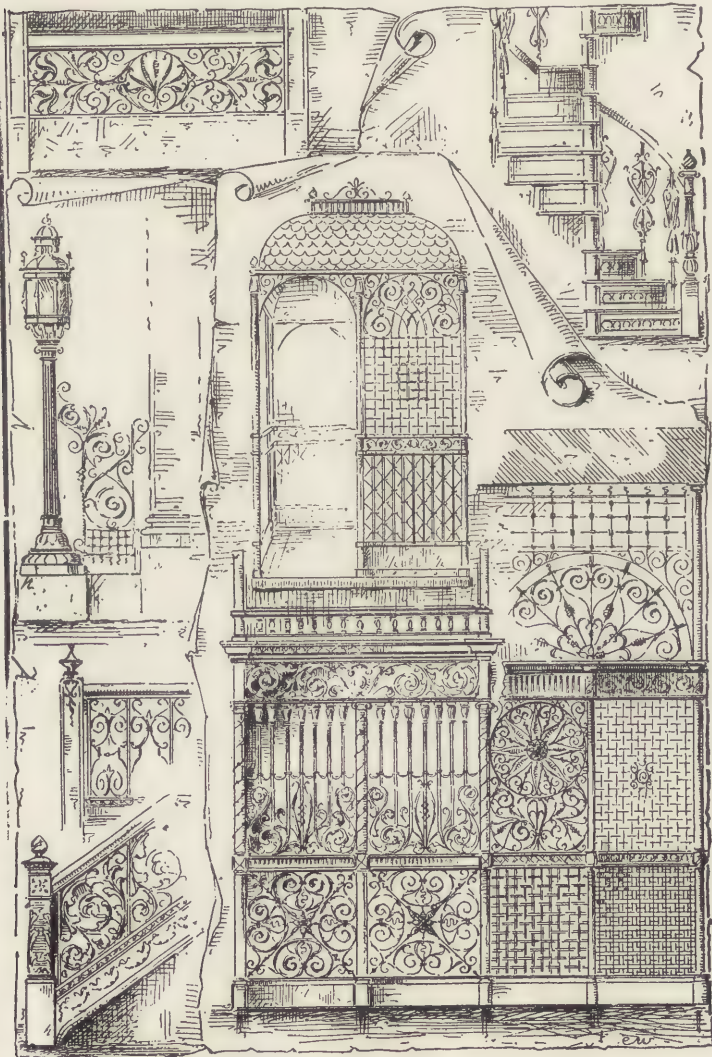
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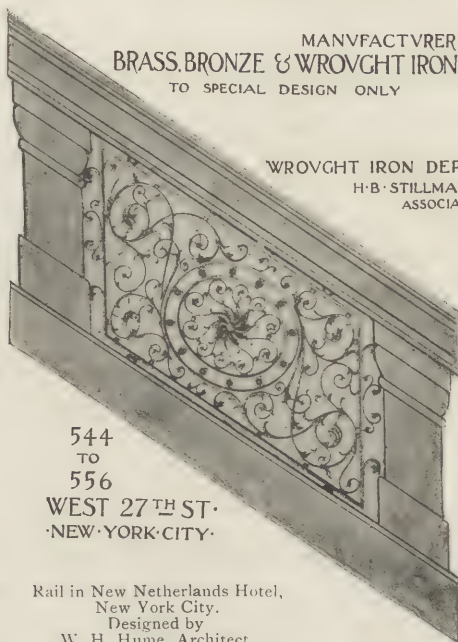
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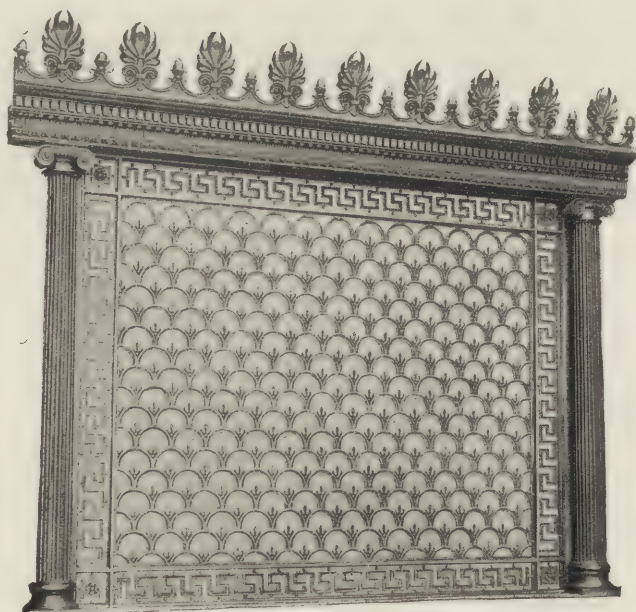
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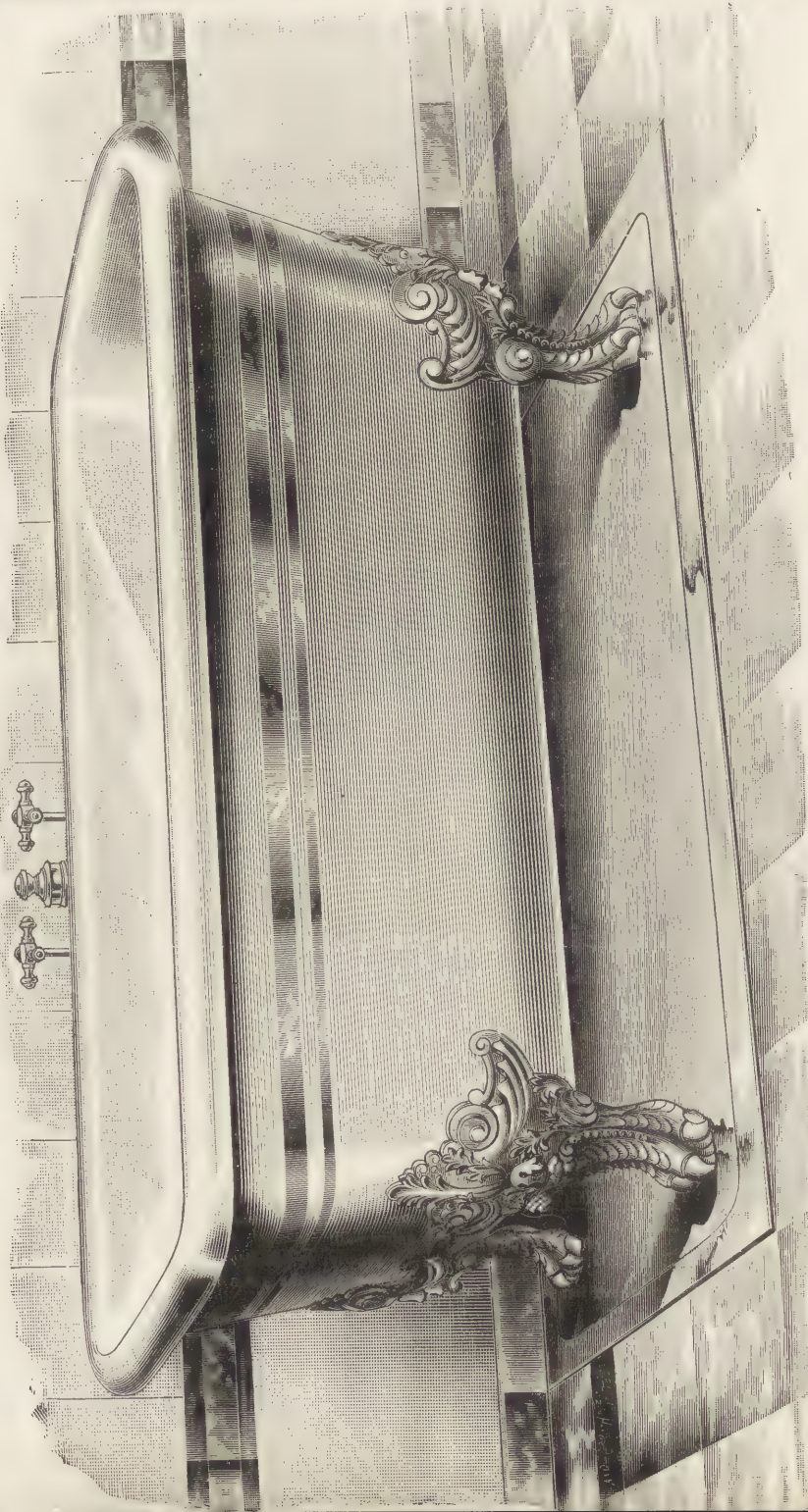
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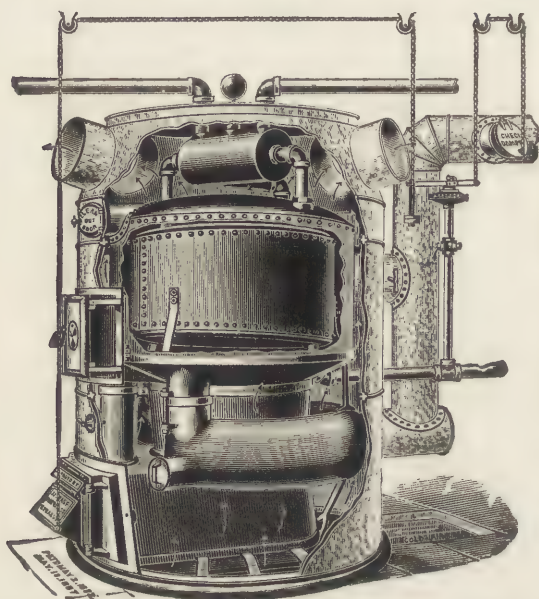
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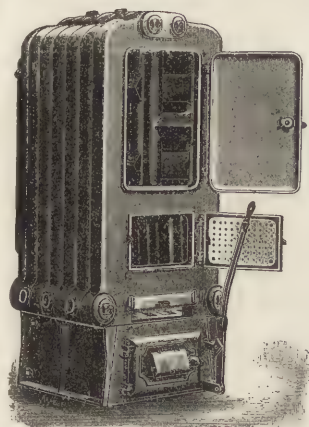
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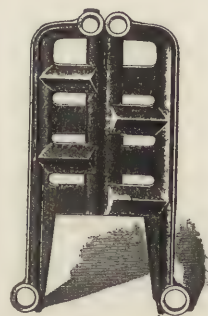
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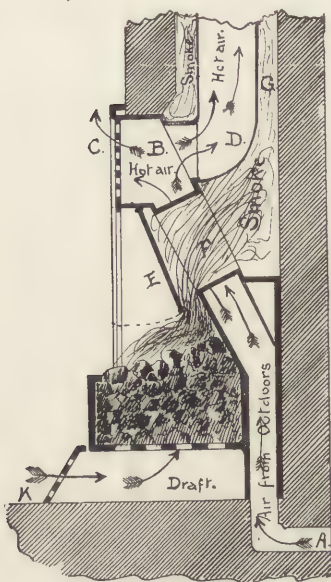
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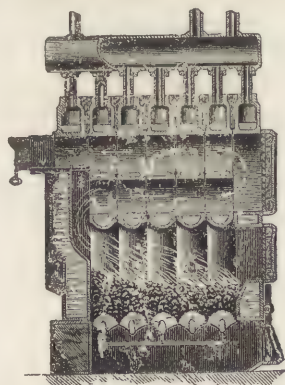
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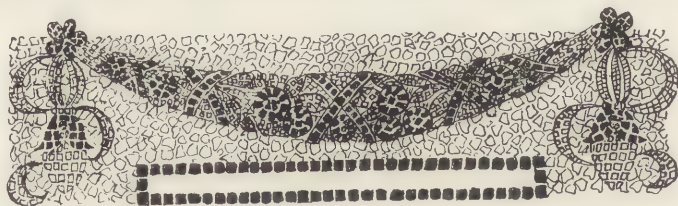
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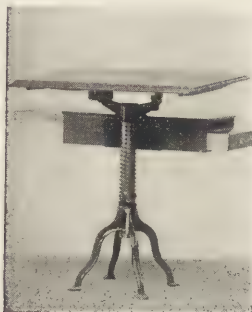
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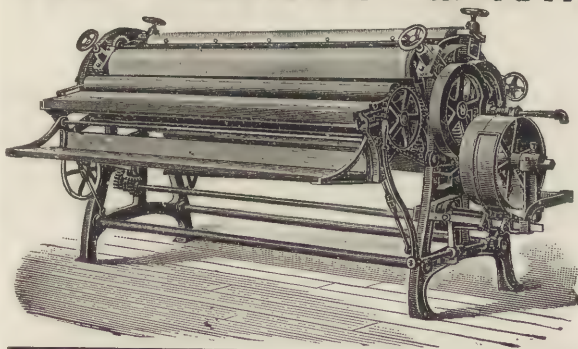
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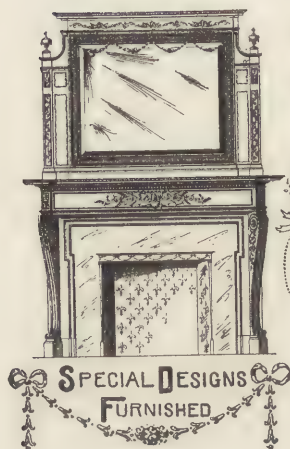
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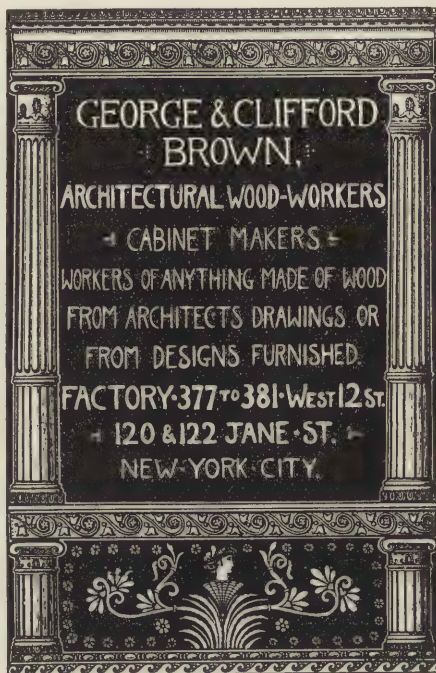
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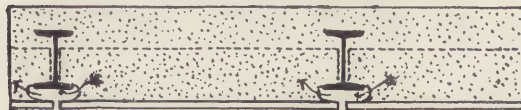
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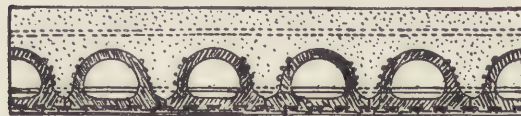
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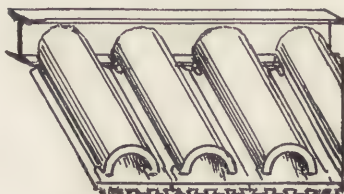
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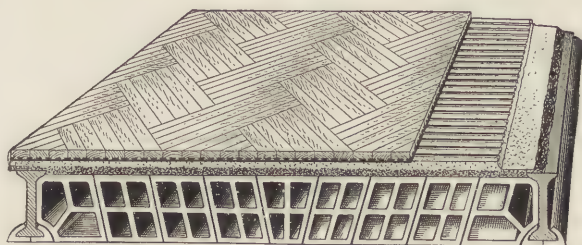
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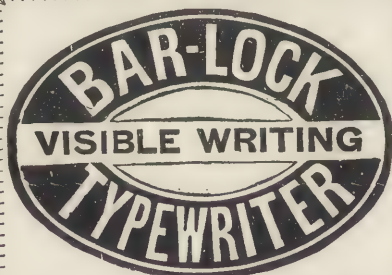
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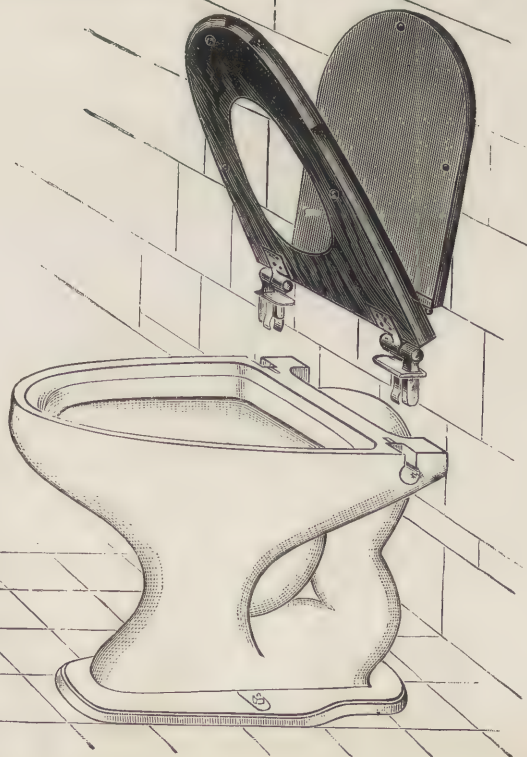
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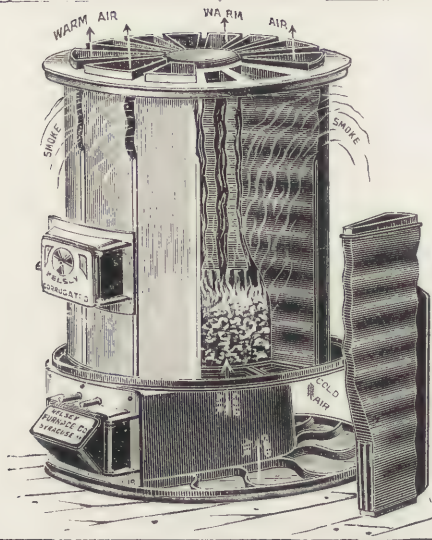
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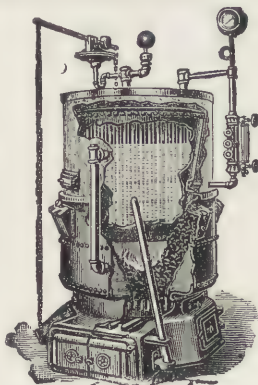
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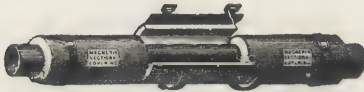
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No. 3.

THE FRENCH UNIVERSAL EXPOSITION OF 1900.

BY a decree dated 13th July, 1892, it was ordained that a universal and international Exposition should be held at Paris in the year 1900, and a law which was passed on July 27, 1894, provided the necessary credits for the preliminary measures in connection therewith. A Chief Commissioner, M. Picard, was appointed, and a General Committee formed to carry into effect the said law and decree.

It was not easy to find, within the limits of the city, an available piece of ground sufficiently extensive to contain the proposed Exposition, which it was desired to make grander and more complete than any of its predecessors, and it was therefore thought by many competent persons that instead of locating the Exposition in Paris itself, it would be far better to look outside the capital for a site which would afford ample room for all the sections and their appendages and thus render it possible to constitute one homogeneous display, like the World's Fair at Chicago. Among the spots suggested were Versailles, Saint-Cloud, the Plain of Courbevoie and the two banks of the Seine beyond the great Auteuil Viaduct. Of all the sites proposed, those of Saint-Cloud and Versailles appeared to be the most advantageous; but there was the drawback that these places were quite apart from the city of Paris and in a different ad-

ministrative district, being in the Department of Seine-et-Oise, whereas Paris is in the Department of the Seine. These, as well as the other suburban sites put forward, were consequently rejected. The financial contribution of the city depended, in fact, upon the Exposition being held in Paris itself, and, besides, the Parisians, who do not care to disturb themselves, strongly opposed the idea of transporting *their* Exposition beyond the walls of the capital.

It then became necessary to look for some available space inside Paris, and this was only to be found in detached pieces, certain parts on one bank of the river and others on the opposite shore, namely: the Champ de Mars in the first place, which has already been used thrice for universal Expositions; the Trocadero, which has been used on two occasions for the same purpose; the Esplanade des Invalides, and that part of the Quai d'Orsay lying between the Champ de Mars and the eastern extremity of the Esplanade. All these pieces of ground are familiar to those who visited the Exposition of 1878 and 1889. They were, however, found to be insufficient for 1900 by reason of the considerable extension to be given to this the last Exposition of the century now drawing to a close, and it was decided that, to the space covered by former exhibitions, should be added:

1. The promenade on the right bank

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BIRD'S-EYE VIEW OF THE PARIS EXPOSITION OF 1900.

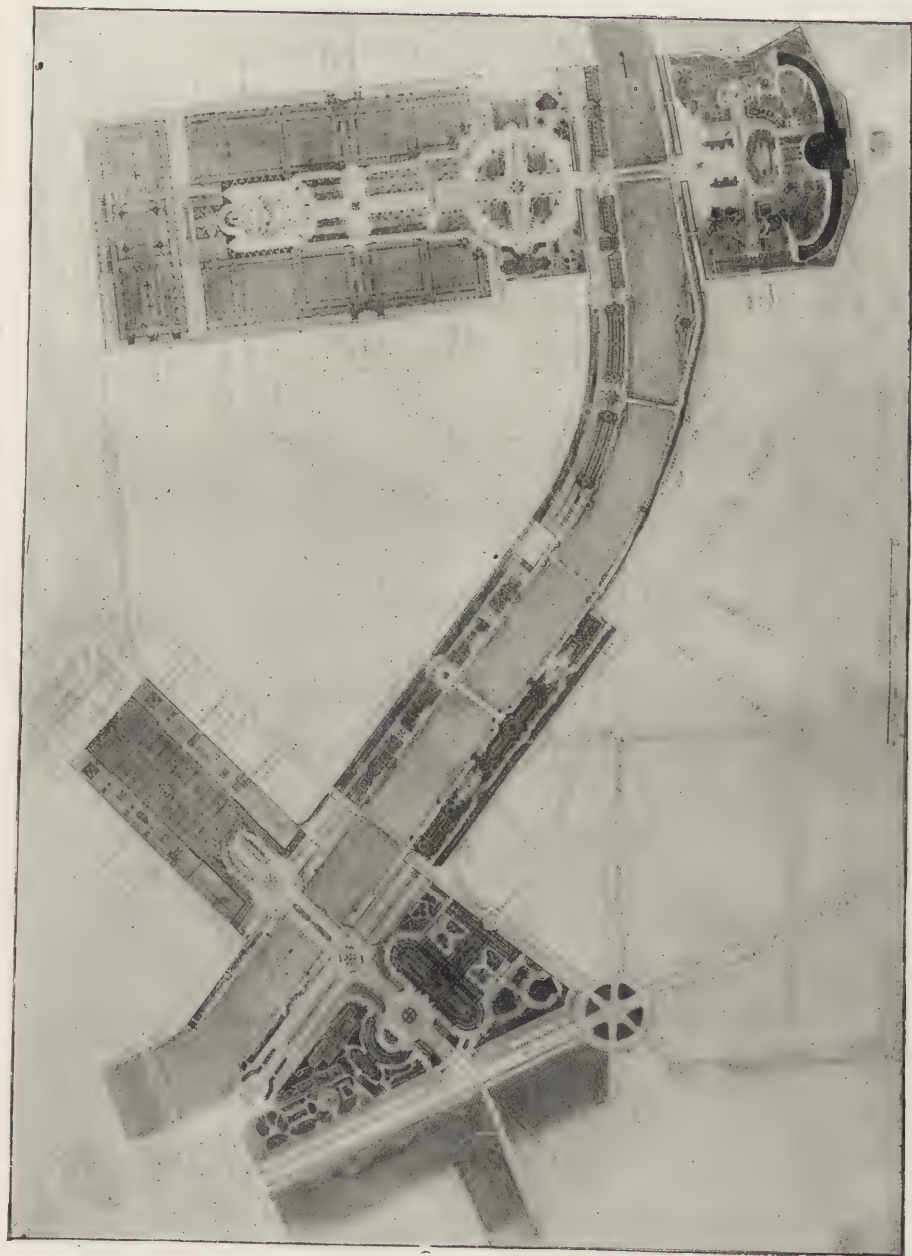


DIAGRAM OF THE PARIS EXPOSITION OF 1900.

of the Seine known by the name of the Cours-la-Reine. 2. The Quai de la Conférence, from the Place de la Concorde to the Point de l'Alma which runs parallel with the Cours-la-Reine. 3. That part of the Champs-Élysées situated between the fine avenue of the same name and the Cours-la-Reine, subject, however, to the beautiful trees and the cafes and restaurants now existing there being retained.

No sooner had this scheme been made public than the Parisians, through the medium of their newspapers, their municipal council and even their Deputies, raised loud protests. People believed that the Champs-Élysées, which is assuredly the most magnificent promenade in Paris, was going to be partially destroyed, or, at all events, shorn of some of its grand old trees. In this way Paris, through her mouthpieces, first insisted upon the absolute necessity of locating the Exposition within her borders, and then, through the same organs, most inconsistently declined to grant a notable part of the space required. Public opinion in Paris is too often given to contradictions of this kind. For the past twenty years it has clamored for the construction of urban railroads, the street traffic having become very congested at several points. But the public will not have underground tracks on account of the dark tunnels, and elevated roads are objected to because they would spoil the perspective. The inhabitants must therefore rest contented with electric cars, running on rails laid along the roadways, and the streets will remain as overcrowded as ever.

A competition was arranged in the month of August, 1894, open to all architects and engineers of French nationality, for the purpose of establishing a general plan of the Exposition, accompanied by drawings, elevations and estimates. It was anticipated that this competition would elicit some original ideas, or, in any case, some useful suggestions. One hundred and eight schemes responding to the conditions laid down were handed in to the Committee. Three first prizes were awarded to MM. Gerault, Eugène Hénard and Paulin; four second prizes

to MM. Cassien Bernard, Gautier, Larche & Nachon, and Raulin; five third prizes to MM. Blavette, Esquié, Rey & Tronchet, Sortais, Toudoire and Pradelle, and six fourth prizes to MM. Bonnier, Hermant, Louvet & Varcollier, Masson-Détourbet, Mewès and Thomas & Tavernier. All these gentlemen are pupils of the Paris School of Fine Arts. The Committee has reserved to itself the ownership of the successful schemes, as well as the right to embody any parts thereof in the plan finally adopted.

It would be of little interest to consider here which of the schemes were the best, or those which best fulfilled the objects of the competition. The decision was exactly what was to be expected from a jury more concerned with the talent displayed by the competitors than with the suitability of their productions to the purpose in view. It thus happened that the jury failed to give any prize to the project which solved in the best and most complete manner the hardest part of the problem, namely: the union of the Champs-Élysées and the Esplanade des Invalides. This project is precisely the one which the Committee has definitely decided upon. Its author, M. Esnault-Pelterie has the honor of it but not the profit.

The ground allotted to the new Exposition, divided into five portions, has a superficial area of 106 hectares; that is to say, 1,080,000 square metres, or nearly 267 English acres. This space would be very limited if the several pieces of ground were not situated in districts where there are ample means of ingress and egress by long, wide avenues. But, as can be judged from the general plan here given, these plots of ground are mostly far apart from each other, so that if it were necessary to go on foot from one part of the Exposition to another, a whole day would not be sufficient to make the entire round, even without going inside the various buildings. It was consequently requisite above all to consider what means could be provided within the Exposition itself for transporting visitors rapidly from one point to another. By the plan the reader will readily perceive the track of the pro-

posed railroad if he will kindly follow the route we shall now describe.

Two lines of railroad will be laid down, one on either side of the Seine. The principal entrance to the Exhibition will be situated on the Place de la Concorde, at the beginning of the Quai de la Conférence and the wide avenue called the Cours-la-Reine. It has not been considered necessary to carry the railroad along the Champs Elysées. This part of the Exposition will be devoted to physical and mental recreation, and it is presumed that the crowd in that part will be stationary. For this reason the railroad will only start from the point where the Avenue d'Antin begins. From there it will go in the direction of the Trocadero. From the Pont de l'Alma onward it will overhang the river and run without any stopping-place to the Pont d'Iena.

On the left bank the railroad commences at the western extremity of the Esplanade des Invalides and goes in a straight line to the Avenue La Motte-Piquet; from there, bending to the right, it follows that avenue, carried on iron pillars, and reaches the Champ de Mars; passing along the rear thereof it turns on the western flank, and so reaches the Seine by way of the Avenue de Suffern; there it turns towards the north, passing the Eiffel Tower, the Palaces of the War and Navy Departments and the edifices of foreign countries, and making a curve returns to its starting point. It is, in fact, a circle railway. If it can be built with a double track two trains will be able to circulate in opposite directions without interruption.

The means of rapid transit having thus been described, we will now speak of the buildings which are to be erected and the purposes they are intended to serve. The object aimed at by the eminent engineer, Le Play, Chief Commissioner of the Exposition of 1867, was to establish a philosophical classification of the multifarious exhibits. Since then, for the successive Expositions of 1878 and 1889, the classification made at that period has been adhered to, with certain modifications, but retaining the original method, which was a logical one in all its lead-

ing features. This order will once more be followed. But to adopt it in its minutest details has been found, as before, quite impracticable, and therefore, while remaining the same as hitherto in its general outline, the scheme of classification will not be absolute or entirely rigid in every particular. This point admitted, we may say that the arrangement will be as follows:

1. Near the principal entrance, on the Champs Elysées: Education, Public and Private Instruction, the Liberal and the Fine Arts, and the Pleasures and Embellishments of Life.

2. On the Esplanade des Invalides, connected in a direct line with the Champs Elysées by a very wide bridge: the Decorative Industries and everything allied thereto, the exhibits of the Sèvres Porcelain Works and of the Gobelins Tapestry Manufactory, Analogous Industries, and those upon which art exercises a direct influence, such as Furniture Construction, Carpet-making, Pottery, Bronze and Jewelry. For the Sèvres exhibit a special building will be erected in enameled terracotta.

3. On the Champs de Mars: Industry in all its countless forms, each manufacture being represented by the raw material employed and the processes and instruments of fabrication.

It is intended that the Eiffel Tower shall be left as it is, without adding anything that could disfigure it. Beginning near the tower two parallel wings will extend along either side of the Champs de Mars to a Central Palace at the other end. The latter will be the home of electricity. Between these two long galleries the existing promenade, ornamented with flower beds, will be lengthened, and at the end there will be a splendid array of fountains, surpassing in size and beauty the famous luminous fountains of 1889.

The immense Machinery Hall, situated in the rear of the edifices we have just mentioned, is retained. In its central part there will be a large assembly-room for festivals, capable of containing five thousand persons. The remainder of the Machinery Hall will be devoted to agriculture. In the tw

great wings on each side of the Champs de Mars will be displayed: on the right in descending towards the Seine—

1. Chemical manufactures, which section will also occupy a part of the left wing. 2. Mines and metallurgy. 3. Cotton, tissues and dress, scientific instruments, letters and arts. In the left wing, after chemistry—1. Machinery in motion. 2. Civil engineering, hygiene and means of transport. 3. Foods, wines, etc.

We have thus traversed the field of industry, scientific and applied. Between the extremities of the two wings devoted thereto and the river, there is a large space on either side of the Eiffel Tower, and it is intended that here various supplementary pavilions shall be erected, the ground between them being ornamented with flower beds. These pavilions will not be so closely crowded together as were those of 1889 in the same place. There will even be room to build a theatre on one side and a spacious concert-hall, or perhaps an edifice for the display of children's games, etc., on the other side.

Finally, if we descend to the very bank of the Seine we shall find two symmetrical buildings, one on each side of the Pont d'Iéna. The edifice on the down-stream side will be filled with fishing and hunting implements and forest products; that on the up-stream side will be wholly utilized for the mercantile marine.

By following the left shore of the river in the direction of its source we come to a splendid spectacle. First of all we meet with the Navy, which, with the Army, covers all that convex space comprised in the curve made by the Seine between the Pont d'Iéna and the Pont de l'Alma. In the two preceding expositions this ground was occupied by agriculture and kindred subjects. The plans and frontages of the two edifices which will represent the Army and Navy are not yet drawn. They will be made by architects appointed by the Ministers of War and of the Navy and not by the official architects of the Exposition, who have simply determined the ground to be covered by these buildings. Between these

two edifices there will be an open space giving access to a temporary foot-bridge leading to the other side of the stream.

From the Pont de l'Alma to the Esplanade des Invalides the great sight will be the series of edifices built by foreign nations to contain their choicest productions and, above all, to illustrate their manners and customs and their architecture. Provided the various countries enter heartily into the spirit of the thing and thoroughly carry out the plan conceived by the General Committee, this portion of the Exposition will be, if not the finest, at all events the most original and picturesque. Midway along the line of foreign exhibits there will be another foot-bridge to enable visitors to cross from one side of the river to the other.

As to the right bank of the Seine, the Exhibition will only occupy the space comprised between the Place de la Concorde, where the main entrance will be, and the Pont de l'Alma; but here the ground will be wider than on the opposite bank, as it will include one of the most beautiful promenades in Paris, namely, the Quai de la Conférence and the Cours-la-Reine, that is to say, a space 1,000 metres long and 80 metres in width. The buildings, however, will only occupy the part situated between the Pont des Invalides and the Pont de l'Alma (about 460 metres); the rest, which borders the Avenue des Champs Elysées and in a manner belongs thereto, will remain, as now, the abode of pleasure and amusement.

The Champs Elysées will be adorned by some permanent edifices. Two art galleries will be constructed there—one to contain the Fine Arts and the other Retrospective Art. Between the two a wide avenue will pass, leading across the river to the Esplanade and Hôtel des Invalides, which will thus be visible from the Champs Elysées. So far, only the perimeter of these galleries has been drawn. The first will be the subject of a competition, while the other is to be constructed in accordance with the plans of the Committee of Architecture. The Fine Arts



BIRD'S-EYE VIEW OF THE NEW AVENUE FROM THE CHAMPS ELYSÉES TO THE
HOTEL DES INVALIDES.

Gallery will be built on the Avenue d'Antin, and the other, a long building terminating at each end in a hemicycle, will front the new Avenue des Invalides. It will contain exhibits of a varied character, and in it will be held, when the Exposition is over, the annual horse contests of the Société Hippique, which have hitherto taken place in the unsightly building known by the name of the Palace of Industry. This so-called palace, which was constructed in 1855, will be pulled down.

Beyond the Avenue d'Antin, in that part of the Cours-la-Reine and of the Quai de la Conférence fronting the monumental line of edifices of Foreign Powers, there will stand three groups of buildings, each group symmetrically disposed and facing in the same direction. First there will be the group of the City of Paris, close to the Avenue des Champs Elysées. At the other extremity, near the Place de l'Alma, will be located a meeting place for Congresses and international assemblages, of which there will doubtless be a goodly number. This edifice will necessarily contain numerous conference rooms of ample dimensions. There will be a separate entrance, so that persons attending the meetings may not be compelled to pass through the gateways of the Exposition in order to reach this place of meeting. Between the Congress Hall and the City of Paris buildings there is a large space of about 400 metres in length. In the centre of this and covering more than half its surface will be the Horticultural Hall, which is principally intended for the purpose indicated by its name. On each side of it there will be a garden, with hothouses, etc. The display of flowers will continue during the whole time of the Exhibition. Hopes are entertained that this building will be sufficiently elegant and well constructed for the public to insist upon its permanent retention. Between these buildings and the street behind there will be a road for the circulation of visitors and the passage of vehicles to the section of Horticulture. From a point near the Horticultural Hall a wide foot-bridge will stretch across the river to the Foreign section. In this manner

the two banks of the Seine will be united by four bridges and two foot-bridges. Three bridges exist already, and the fourth, larger than any of the others, is projected to carry a new avenue which will lead from the Champs-Elysées to the Esplanade des Invalides. It is proposed to make this bridge not less than 60 metres wide, but we doubt that it will exceed 40 metres, as protests are being raised by many persons who consider the former figure excessive.

It remains for us to speak of the Trocadero. This will be devoted entirely to the French Colonies and Protectorates; that is, to exhibits from Algeria, Tunis, Tonkin, and perhaps Madagascar. The location and erection of the edifices for those sections are matters appertaining to the Colonial Minister. The Committee of Architecture has, however, decided that at the points where the roadway enters and leaves the park there shall be two symmetrical buildings, having in their central part a large porch. This road is a much frequented one. A tram line runs along it, and it connects the outlying district of Passy with the Champs Elysées and other fashionable quarters of Paris. The remaining Colonial edifices will be distributed in the other portions of the park. The large amphitheatre will, as in the past, be used for grand musical performances, and the other rooms will be filled with ethnological collections.

Such, in its broad features, is the general plan of the great Exposition of 1900. The designs here reproduced and which are the only ones at present procurable, set forth the actual stage of the scheme. As the work of the General Committee advances and further plans are adopted and traced on paper, we shall be able to illustrate those that seem to deserve attention, adding thereto a few lines of explanation.

It is estimated that the Exposition will cost \$20,000,000. We question whether this sum will be adequate, but the work once commenced it will have to be carried through to the end, cost what it will. The opposition will not be able to block the scheme as a whole.

both Houses having sanctioned it by the law of the 27th July, 1894. Efforts will, however, be made to prevent the destruction of the existing buildings, some of which, we admit, might be utilized again. The principal objections will come from those who wish to retain the Palais de l'Industrie, where each year are held the Exhibition of French Art, the Horse Competitions, which are the occasion of one of the great fêtes of the Paris fashion world, and also the Fat Cattle Show. But this apology for a palace is tumbling in ruins and the outlay requisite to put it in good repair is very little short of that necessary for the erection of a building larger, more convenient, and worthier of the city of Paris. It is therefore certain that the opposition will not succeed.

Before closing this short paper we think it right to state that at the moment of writing (June 29th), there does not yet exist a single definitive plan for any of the projected buildings. Even the Paris Municipal Council which is asked to give a subvention of 20,000,000 francs, and will certainly grant that sum, has nothing before it but the bird's-eye view which is here given in two parts. The Senate and the Chamber of Deputies, which have to provide the balance of the hundred million francs required, will, in addition to the plans we now reproduce, be furnished with a few other drawings which are in course of preparation; but these will undergo several modifications ere they are finally passed, even if the credits are voted. Moreover, the leading "motive" of the Exposition, namely, the "Palais des Beaux Arts," the site of which, rather than the form, is seen in the bird's-eye view, and which monumental edifice is destined to remain after the Exposition has passed away, is to be submitted to a competition of French architects. Such, at all events, is the proposition of the General Committee. This competition cannot very well be finished earlier than the month of November,* and until that time anything that may be published purporting to be

drawings of the projected edifices must not be taken seriously, being purely the production of a too active imagination.

One of the chief preoccupations of the General Committee and that which has been particularly the object of long and anxious study on the part of M. Picard, Chief Commissioner, of M. Henry Chardon, Secretary, and also of M. Bouvard, the Architect of the City of Paris, has been that something grand and imposing should remain after the close of the Exposition. It may be said that this desire was shared by every Parisian. I myself had a word to say upon the subject, and in the *Soliel*, one of the most widely-circulated Paris journals, as well as in the leading French review, namely, *La Revue des Deux Mondes*, urged earnestly the idea of establishing a large road running in a straight line from the Avenue des Champs Elysees to the triumphal edifice called the Hôtel des Invalides. This idea, as will be seen by Fig. IV., has been adopted. A wide bridge will connect the two banks of the Seine, and the perspective will not be obstructed, either by different axes or by intermediate constructions. The bird's-eye view here given is not that of the Exposition, but shows what the scene will be like *after* the Exposition. This part of Paris will then constitute one of the finest promenades in the world. The groups of trees on the Champs Elysees will be left untouched, while those of the Esplanade des Invalides which were recently cut down to make room for a railroad station, will be replaced, as far as possible.

The destruction of trees in Paris is a very serious thing. One can never trace the culprit. He is so high-placed as to be out of sight. In the case of the trees cut down on the Esplanade des Invalides it was a Minister who made with the railway company the convention which, in spite of all promises given to Parliament, will have to be carried out. When it was asked whether the Minister who signed the convention was responsible it was discovered that behind the Olympian cloud called the Government, there was such confusion as to responsibili-

* It was not finished at the moment these pages went to press.

ties that the whole governmental edifice would tumble down if a single stone was touched. The evil is now consummated : on either side of the projected grand avenue there is, as our figure shows, an empty space, from which rows of trees have been cleared for the purposes of the new depot.

Count Alphonse de Calonne.





ARCHITECTURE IN SPAIN.

Part III.

IF you walk down towards the Royal Palace in Madrid any morning you will pass through the old Plaza Mayor, and look with admiration at the magnificent bronze statue of Philip IV. It is one of the grandest equestrian monuments in Spain, and you will observe that there is no less art displayed in the very pose of the horse, the flowing scarf and magnificent armor of the old fighting king, than in the architecture of the surrounding Plaza. Indeed, you will learn that no less an artist than Velazquez made the cartoons, Pedro Tacca, the foremost of Florentine founders was responsible for the casting, and Galileo made use of his knowledge of equipoise so that the knightly horse and rider should not pitch headlong from the pedestal, and turn good art into ruin by the fatal plunge.

If you then pass on through the Plaza towards the Palace, where stand the remains of the old Alcazar, you will probably hear the martial strains of the peculiar Spanish melody which tells of the daily guard mounting before the Palace. And if you open a little doorway to the left of the huge gateway, you will see before you an array of glorious old armor that is of wonderful beauty. It shows to what height of perfection art in metal work

was carried in Spain away back centuries ago, when the age of chivalry brought into existence a branch of art really wonderful in its perfection, but which has now passed into oblivion. I wish I could show you the accoutrements of one of these knightly old fellows, such as the armor Cortes, one of the simplest, yet strongest examples that confront you in the Armoria Real.

To leave the subject of the Spanish ecclesiastical structures of the Gothic period of the fourteenth and fifteenth centuries as represented by the glorious cathedrals of Burgos, Toledo and Leon is like beginning the descent of the architectural hill. The summit has been reached and the tendency is downward. These three cathedrals will forever stand as the highest and best examples of the Spanish church, and their grandeur was never approached in any subsequent work. That they were undoubtedly the outcome of French study and French examples ought not, I think, to detract in the least from their value as integral parts of the architectural glory of Spain.

It was quite impossible that the spirit of the pointed age should be entirely given up to ecclesiastical work, and as a natural outcome we find the



Valencia.

THE LONJA.

A. D. 1482-1498.

same spirit creeping into some of the civic structures of Spain.

One of the most interesting of these is the Lonja at Valencia, and since I have a good photograph of this building, and since it was erected just at the time of the transition in 1482, it will best serve our purpose. It was designed by Pedro Compte who was then at work on the cathedral, and it will be noted at once that recollections of Eastern work must have influenced him in his design, for 'although he chose the Gothic as his *motif* in general, his flame-like battlemented walls are ear-marks of a foreign influence still further shown in the strange label mouldings which ornament the front over the entrance. Their presence forms the best criticisms of the façade, for if they had been omitted the strength of the plain wall surface with its beautiful entrance and flanking windows would have been sufficiently set off by the single cornice and picturesque skyline above. The architect, however, seems to have won renown for his work, as no sooner was it completed than he was elected Alcaide

perpetual of the building, and was voted the princely salary of thirty pounds a year. This fact was no doubt encouraging to younger architects of his day, and formed an incentive to greater achievements, although I do not know of any who emulated his example by building so interesting a design.

I chose this example of a civic structure because it affords an example of the gradual transitional period which was just commencing. Observe if you will the arcade of the attic adjoining the tower. The hand that designed the entrance also designed the arcade, and showed that he was studying other models, those of the Italian school of the Renaissance. He could not help experimenting with his attic, and ornamenting his cornice with wreathed medallions which were typical of a coming style, which, running through the era known as the *plateresque*, was soon to become the architecture of the Renaissance of the sixteenth century.

This decadence of the Gothic in Spain was rapid in the extreme, and



Valladolid.

CHURCH OF THE CONVENT OF S. PABLO.

A. D. 1442-1468.

leaving in its wake nothing of worth brings up a question of much interest. Why is it that the development of a nation in any of its arts, the advancement of culture to its highest point, and the production of true beauty in its formative arts, is so often followed by a stagnation and general degeneration, rather than by a strengthening of its ideals and a continual advancement towards the perfection of those ideals? Yet it seems this has been the history of nations in all ages. Is it true that art is demoralizing and the study of art enervating?

One example of this decadence will suffice to show how much study may be put into a bad work, and how detail, beautiful in itself, may be put to bad ends: San Pablo at Valladolid was built about 1450. Cardinal Torquemada, the ferocious confessor of the beautiful Isabella, is credited with its conception, and it was dedicated "to the extirpation of heresy for the glory of God and the exaltation of the Catholic faith." The terribly twisted oval label, with rich flamboyant tracery, armorial decorations and saints, male and female intermingled, weakly supports a mass of ornamentation which runs riot above, and forms a veritable frosted cake frame for a recessed rose window, weak and insignificant in the extreme. Neither the glory of God nor the extirpation of his saints could be any excuse for such stuff, and one experiences a feeling of disgust at the whole façade. It was the death of pure Gothic art in Spain. One turns with relief to the adjoining College of San Gregorio with its beautiful court and staircase, over which is one of the most wonderful *artesonada* ceilings in Spain.

Florence is spoken of as the birth-place of the Italian Renaissance, and it is necessary to mention this fact because Italy was the first country to compromise between the traditional architecture of the country and the influences of the newer and lighter forms. And because Italy was the ideal home of the palace, and the palace was the assumed home of riches, the birth of a new style, rich in detail, naturally began at this point. Italy was then the home of art, and she was

no less its school. Students flocked to her centres to study, and in leaving took with them the results of their studies. It followed, naturally, therefore, that Italian models should find their way into Spain and form the basis of the Renaissance art of the country. The discoveries of Columbus and Pizarro also had filled her coffers with gold, and Ferdinand and Isabella were anxious for the advancement of their country in every line of art. I believe, therefore, that the introduction of the Renaissance was the natural outcome of these two facts, and the new birth meant the simplifying of outlines and the enrichment of classical forms. The superabundance of ornamentation and its assumed forms marked the general distinction between what was known as the *plateresque*, and the purer types of enriched classical forms which marked the true Renaissance.

Of the former type Santo Domingo at Salamanca, a Dominican convent, was erected under the patronage of Juan Alvarez and Diego de Deza, two grand old bigots, who divided their pleasures between the torture of heretics in the *autos de fe*, and picturing the interesting scenes in tablets of stone. But they were also patrons of art, and in gratitude for the amusement thus afforded them by the Almighty they paid the debt by erecting a convent, a common bargain in those days. It was at the birth of the Renaissance, as shown in *plateresque*, but the architect again could not altogether give up his ecclesiastical training in the Gothic, so he slightly pointed his immense arched entrance, clung to his pure Gothic aisles and plastered his façade with enriched Gothic ornamentation: the result is weak and puerile. A huge arch only sufficiently pointed to show that it might almost have been a mistake of the builders, supported on two delicate pilasters with the spring of the arch battered off into weakness, each of these points showed a giving up of the old established forms and methods, a running contrary to constructional ethics, and a groping about for something new and unknown. Such methods are always disastrous. How one's



Léon.

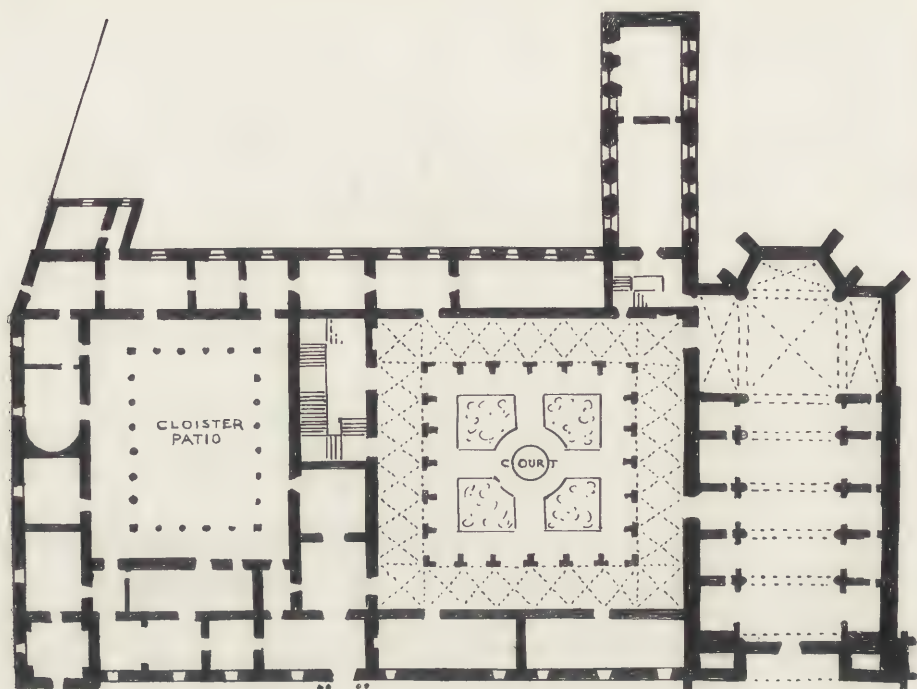
CHURCH OF THE CONVENT OF S. MARCO.

mind reverts again to the source of true ecclesiastical purity, the Gothic of France, where the design of form is churchly, carried out systematically on constructional principles, and the very strength of the religious life, faith and aspirations of a people are shown in buttress, arch, tower and spire pointing Heavenward. Most certainly no other style can so fitly express religious feeling and sentiment.

But while this fact became apparent to the architects of the time, there was a department of work in which the new birth could be more fitly expressed. The convents were structures whose forms lent themselves more properly to the new style. Around them clung the stories of sacred lore and the traditions of the church; and the existence of an exuberance of heraldic device among the clergy and the patrons of art was to furnish much of the material on which the work depended for its beauty. We find, therefore, in San Marco at Leon, built between 1513 and 1543, one of the most beautiful and successful specimens of the Renais-

sance. It was most certainly the masterpiece of Juan de Badajoz, who was the best known architect of his day.

In San Marco it will be noticed that the Gothic detail has almost entirely disappeared and simply crops out on the buttresses of the church façade. It was almost an admission that the fitness of things demanded some such sop to the old forms which heretofore had only been complete with "vaulted dome and Heaven-reaching spire." At any rate Juan de Badajoz could not quite blot out this Gothic ear-mark. His general plan of the convent was a rectangle about 360 by 200 feet, and within it he built his beautiful cloisters, the chapel and their surrounding buildings. It is one of those charming old places which teem with reminiscences of past ages, quiet and peaceful, shut out from the world, where one having lived must need therefore think upon his sins, lay plans for his future, and as the true *raison d'être* of the monastic life disappeared, fill his paunch with mull and barbicue. Sad to relate this was but a



· CONVENTO · SAN · MARCO · · LEON ·

true story of the latter state of many of these beautiful institutions.

I know of no more beautiful parts of the architectural composition of Spain than the cloisters. The heat is so intense that at mid-day they are most refreshing. Who of us in visiting the cloisters of old San Marcos, or Huelgas, or Monreale in Sicily, or a hundred others in Italy and England, has not been charmed with their beauty, and possibly been able to enter a little into the spirit of rest and quiet which they were intended to preserve. Possibly also some vandal student, while being filled with architectural zeal as he sketched, may have sworn that those old monks were not quite such fools as some would have us believe, and have longed ourselves to let the square and pencil go to the dogs, and rid ourselves of the pestiferous demands of modern plumbers and mechanics in general. Just think of the joy of these old souls who snapped their fingers at such cares, sought the seclusion of their little nooks and

studied away in peace. I picked up an old record which gave a little insight into their joys: "In every wyndowe were there pewes or carrells, where every one of the old monks had his carrell severally by himself, that when they had dynded they dyd resorte to that place of cloister, and there studyed upon their books, every one in his carrell all the afternone unto evensone tyme. This was their exercise every daie." This is at least most quieting to the nerves of the ordinary rushing architect of to-day.

In looking at the detail of old San Marco kindly place a card over the atrocious bit directly overtopping the entrance, for this was not a part of the original design, and was erected at a later date. The noticeable point of the whole design is enriched simplicity, and a decoration of classical forms, which is, after all, the very keynote of the pure Spanish Renaissance. That Italian models were an influencing factor is shown in the festooning in the frieze, which is similar to that in the Raphael

Loggie at Rome. It is probable that the architect had seen them, since they were executed during his time and before he had worked out his scheme of San Marco.

I have said that while the Renaissance was not adapted to ecclesiastical structures, it was eminently fitted to other classes of work, and from the mass of secular work that comes to mind the University at Salamanca and the Hotel de Ville at Seville, erected about 1550, have always been regarded

he will see the weakness of the one style and the strength of the other.

The second work to which I referred, the Ayuntamiento, or Hotel de Ville, at Seville, is a long building facing the main square near the Cathedral. It is but two and three stories in height, and thus well proportioned. It was laid up in the block method to be carved when completed, but only a part of it was ever completed. It will be seen by reference to the plate that although there is an exuberance of



Seville.

THE CITY HALL.

A. D. 1545.

as among the most important. True, when one has said that the Renaissance façade of the University is a triumph of decorative skill, that the art of the carver is shown to perfection, that the artistic relation of pilaster, column and opening are properly placed, the whole story is told. It is just here that the unsatisfactory part of the style lies in Spain, for if one turns about to the façade of the *Escuelas menores*, with its beautiful Gothic windows and simple Gothic entrance,

detail, the proportions are good, and especial attention is called to the windows in the second story to the right and left of the entrance here shown. They are beautiful examples of the Renaissance, and only equalled by those over the entrance of the Hospital of Santa Cruz, at Toledo, built in 1504 by Enrique de Egas. In this entrance, were it not for the broken-backed and bent column which forms the label mould, the whole entrance would be a superb example of the period. The



Toledo.

HOSPITAL OF SANTA CRUZ.

A.D. 1504-1514.

SANTIAGO
HOSPITAL DE LOS REYES CATOLICOS

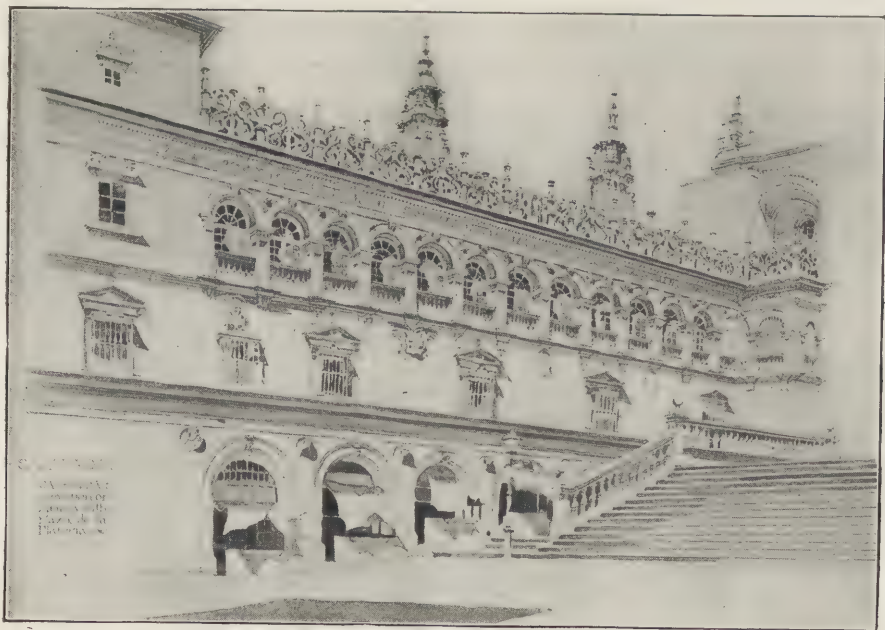
constructional plan of the second story must have bothered the architect, or he would undoubtedly have spread his windows apart and given full place for his entrance. But broken and bent columns are bad, never could support mundane things of stone, and it is an absurdity in any age to ask them to do it in design.

While much of the architecture of the sixteenth century, of which we have been speaking, led to a too fanciful method of design, there was underlying it an inspiration which was all the time working upon the mind of the architects much as it had done in Italy. The value of broad

wall spaces was beginning to be appreciated, and the peculiar planning of the secular buildings, and especially the palaces, lent themselves to this end.

The examples of Brunellesco and the Pitti Palace, of Michelozzi and the Riccardi, of Benedetto and the Strozzi, of Bramante and the Cancelleria, and a host of other works, all lent their influence to the Spanish designers, and a type of contemporaneous buildings was springing up which are among the most satisfactory in Spain.

As early as 1501 came the Hospital de los Reyes Católicos in Santiago, built by Ferdinand and his beautiful Isabella. Here we have a simple



façade with broad wall surface, made glorious by a rich cornice, projecting balcony and highly enriched central entrance. And following this in 1533, in the same town, came the Cathedral Library façade, a noble example of the work of Alonso de Fonseca. In composition the simple classical arcade of the first story is strengthened by the wide wall surfaces of the second story which is enriched by heavily grilled windows. And as if to temper the severity of the design an open arcade with strong shadow lines runs across the whole façade, and is further enriched by a wonderfully beautiful Renaissance cresting of open stone work. When the sunlight streams through this cresting it strikes on the wide staircase below and breaks into a veritable cascade of sunlight and shadows, and the whole court-yard is made glorious.

San Ildefonso at Alcalá de Henares is another façade which is interesting and retains much of its old glory. It was the work of another prominent Spanish architect, Rodrigo Gil, and was built in 1553. Its founder, Ximenez, was a worthy old gentleman, who was of such a lowly spirit that he began his work in *tapia*, a coarse spongy stone, totally unfit for any fineness of detail. Ferdinand objected to the humble material, but was rebuked by the caustic reflection that "it became him, a creature of the dust, to leave marble to his successors." This very frank argument must have been overcome, because the building above the foundation is of a hard grey stone, with strong and effective flanking pilasters. The oval entrance, however, would have been stronger and truer in character if it had been a half-circle. Altogether, however, the effect of the façade is interesting, and the beauty is enhanced by the picturesque window grills and the row of columns with ornamental caps which flank the whole front of the building. This latter point is peculiar to Spanish work, and they are often given a very architectural character by being capped by figure or heraldic device. Whether they served other purposes than an ornament I do not know.

I note immediately in the foreground

of San Ildefonso a singular object, which brings back recollections of travel, and goes to show that that part of the Spanish architecture which is covered by the name "Sanitary arrangements" is wofully deficient. It was in Seville, and after seeing the remains of the luxurious alabaster arrangements of the Moors, returning to the hotel, I asked for a bath, and was met by a questioning stare. Indeed, the waiter rather gave me to understand that it was against the custom of the country.

So I tackled another servant near at hand, who informed me that he went down to the river and took a plunge at night.

Meeting the bootblack in the *patio* I asked him about the bath-room, and he said he bathed in the fountain, in its centre.

Thank Heaven, I thought, the bootblack at least bathes, and there is a bare possibility of joining him if no other chance offers.

But after thinking this plan over and remembering that the windows of the hotel faced on the *patio* and the Spaniards never go to bed until "to-morrow," I decided to tackle the landlord.

I did so, and after various suggestions of a pitcher of hot water, and then a pail, he bethought himself of the antiquated tub of which this photograph shows a fac-simile. I could swear it had not been used for ages, but after an hour's work it was scrubbed up, filled and wheeled up the grand old staircase and deposited in my room.

I verily believe it was a surprise to the tub, it surely was to me, and was probably a regular new birth in its life, and as such a good example of a Renaissance bath-tub.

Almost contemporaneous with the school of the Renaissance was that later style which was known as the Græco-Roman type, but which never attained any degree of importance in Spain. It was due, I think, to the study of the Roman school which was led by Bramanti, whose work extended over the latter part of the fifteenth century. But since it never attained any importance in Spain, it will be simply necessary to mention one ex-



Alcala de Henares.

SAN ILDEFONSO.

A. D. 1550-1553.



Alcala de Henares.

SAN ILDEFONSO (VIEW OF THE STAIRCASE).

A. D. 1534.



THE ESCORIAL — EAST FRONT.

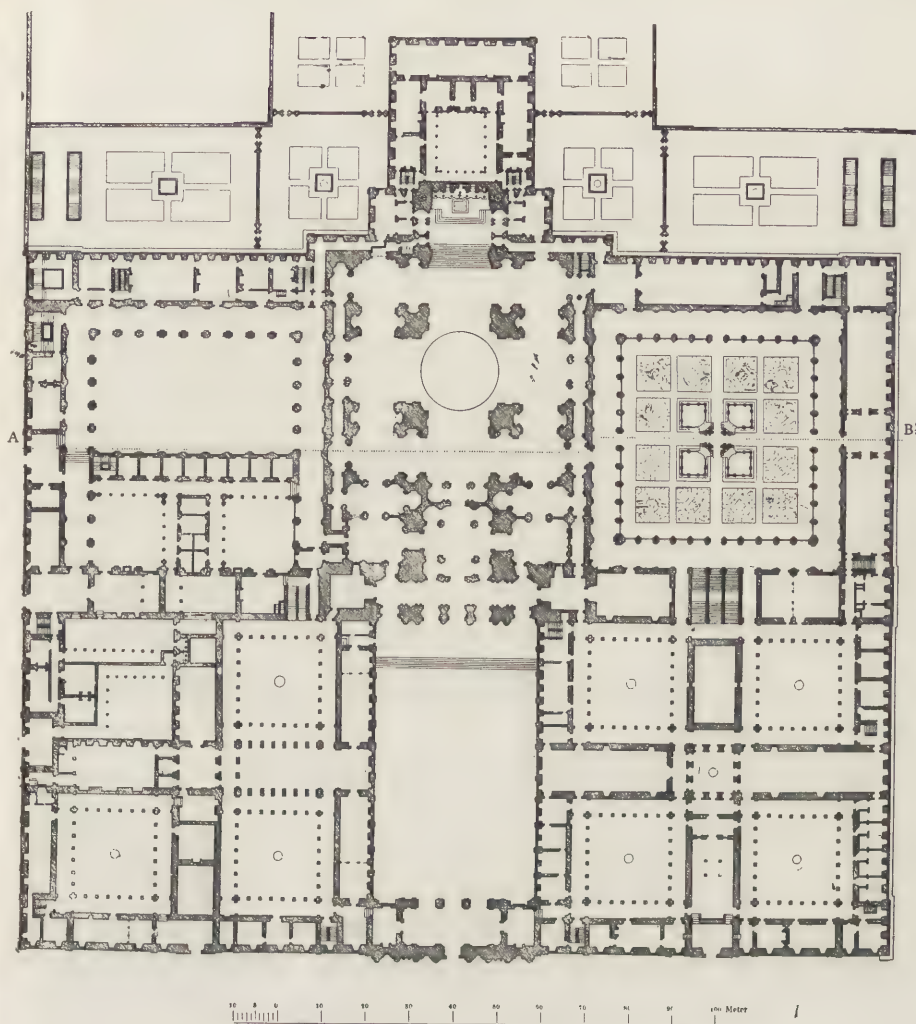
A. D. 1563-1584.

ample of the style, which is possibly the best of its type. Charles V. was a patron of art and first started to erect his palace on the hill of the Alhambra. But after he had torn down a part of the beautiful Moorish palace to erect his monstrosity, he deserted the place and turned his attention to Toledo, where he began a restoration of the Alcazar at that point. The walls of this enormous building overhang the cliffs and look down into the swift running Tagus and the famous bridge of Alcantara shown in the heading of our first article. No more picturesque point could have been selected, and the façade of the courtyard is possibly one of the strongest and best examples of its type in Spain, but inferior, however, to any examples of the Italian masters.

To close the list of architectural celebrities in Spain without mention of the architect Herrera and the Escorial would be an injustice, for although noted work of any worth had almost ceased to exist, this building still forms one of the important points of interest in Spain, and its central feature, the church, is most impressive in its

grandeur. Possibly the history of its erection, its location, and its very *raison d'être* are the important factors, but at any rate it should not be omitted.

Theophile Gautier once exclaimed that "whatever the other ills and trials of life may be, one may console himself by thinking that he might be at the Escorial but is not there," a remark that is only understood fully upon visiting the gloomy pile. One leaves the sunshine of Madrid, and after a few hours enters the cold and barren hills of the Sierra. On every side are interminable valleys and grey mountain backgrounds. The mighty storms of winter whistle through the valleys, pile up the snow into almost impassable barriers, and send a chill to the very heart. The guide picturesquely described one experience: "An ambassador, coach and all was blown into the air and the petticoats of monks and women were blown up like balloons, while lords of the bedchamber by the score in their passage from the convent to the village were whirled around like dead leaves." It is in such surroundings that the huge pile erected by Philip II.



PLAN OF THE ESCORIAL.

is found. It was a palace, a convent and a tomb combined, erected by a man whose mind was seared by contact with the evils of the world, and whose aspirations seemed to be reaching out into the great unknown. As a fitting memorial to the sad King it has become the burial place of the Kings and Queens of Spain.

Under such a state of mind bordering on melancholia imagine his direction to the architect, Herrera. They might have resolved themselves somewhat as follows: San Lorenzo is my saint confessor, my life has been full

of evil, the snares of the world, the flesh and the devil encompass me, I desire sackcloth and ashes, and to live in daily contemplation of the tomb. Now San Lorenzo was known to have been transported from this to the next world on the boiling grills of a gridiron by the will of the fierce Valerian, and he is said to have suffered his martyrdom with such wonderful composure of mind that he requested his persecutors to turn him over lest he be too much underdone on the side uppermost. Here then was the architectural *motif* given to poor Herrera the architect.



THE ESCORIAL—INTERIOR OF THE CHURCH.

If this tradition is true, right royally did he carry out the gruesome plan.

We approach the pile from the steep mountain road and look down upon a general square 750 feet by 580 feet, chiefly built in the Doric order, and flanked by four corner towers and the central dome of the church. It consists of the long gloomy buildings of the monastery separated by numberless courts, the wings of the church and mausoleum, grand in proportion, impressive in size, and inexpressibly gloomy. When you say of the former that the buildings are covered with high-pitched roofs, and are happy in their possession of eleven thousand windows, all the same size and all alike, you have given a description which is as true as it is monotonous, and the only part worthy of serious architectural study is the central motive, the church.

Enter through the courtyard of the Kings with its colossal statues, and you soon stand under the immense dome, 320 feet high and resting on four gigantic pillars 24 feet square. There are three naves 320 feet long, and the *coro alto*, contrary to usual Spanish design, is placed above the body of the church and thus does not destroy or conceal the grandeur of the central cross. It is not too much, I think, to say that it is one of the most impressive interiors in Spain, full of religious solemnity and perfect in proportion. The royal tomb is below the altar, and in comparison with the noble and quiet grandeur of the church is tawdry with gilt ornamentation and variegated marbles. It was here that Philip II. used to reflect upon the sombre visions of the past, and it is here that they laid his body when the end came.

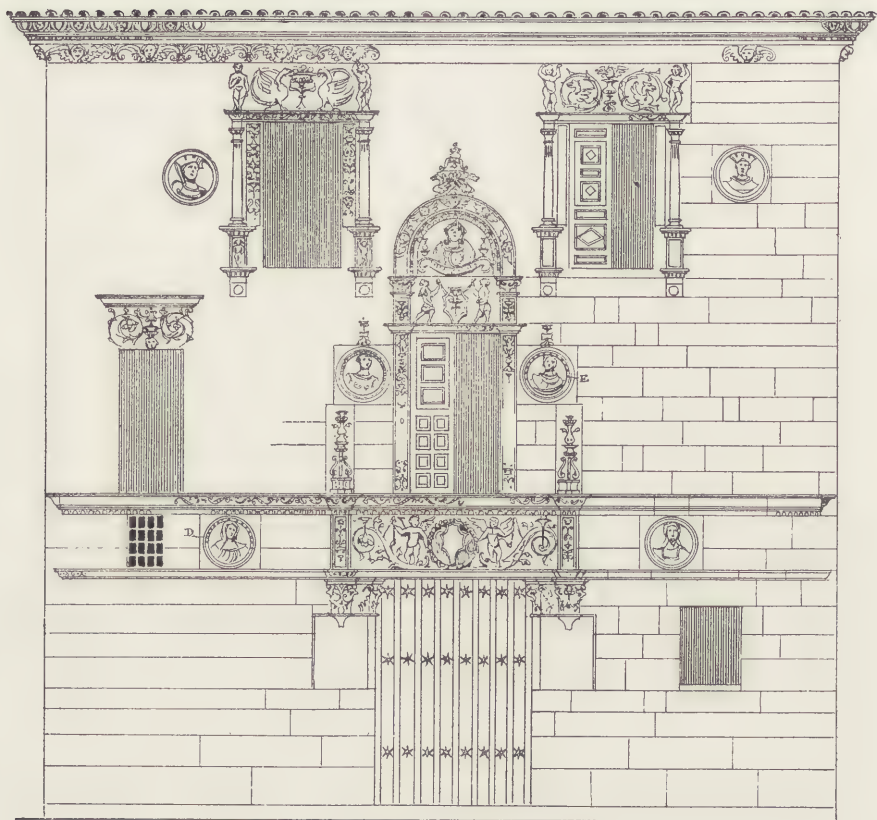
It would be unfair to the architecture of Spain not at least to call attention to the beauty of much of its domestic work. From the noble grandeur of such buildings as the Casa Monteray and the richly diapered shell decorations of the Casa de las Conchas at Salamanca, to the picturesque Palacio Guadalajara, or the little Casa Picos at Toledo with its simple round arch and enormous voussours—all are interesting and instructive. The method of

land division, the semi-barbaric state of the people, who when they built a home built at the same time more or less of a fortress, and possibly the climatic influences of the country are responsible for the results of their designing. They had, too, at their disposal as a decorative *motif* the glorious heraldic devices which for ages had been the honor of their families. Add to these ideas the beautiful garden effects as seen through the little *patios* where sunshine and verdure vie with ancient colonnade for picturesque effects, and the planning of the Spanish homes seems most attractive. Of course the older houses of more extent are rich in arcaded retreats, fine old halls and grand staircases with highly vaulted ceilings, but one homelike little design comes to mind which gave us a welcome one day in grand old Toledo.

A little arched doorway with double doors studded with huge nails confronted us, and upon our knock this door suddenly opened of itself, and disclosed a beautiful *patio* paved with marble, with a little font in the centre from which trickled a tiny spray, and made soft sweet music as it fell again into its basin. All around were tubs of lemon and orange trees with the fruit a deep beautiful green, just turning yellow, and around us was a colonnade whose balcony was reached by a flight of stone steps.

I said the door opened of itself, but on looking up to the balcony there stood two little old women beaming with a smile of welcome, and holding in their hands the latch string which they had pulled to give us entrance.

Off from this balcony we entered our rooms, and under us, in the centre of the court, was a beautiful arcaded entrance from *patio* to garden. Here we were then looking out of our rooms into a little garden through whose centre ran the overflow from the fountain. On one side was a picturesque old potting shed, with tile roof rusty green with moss, and away at the end was an arbor whose wealth of vines covered and spread themselves over the adjoining orange trees in a perfect tangle,



ELEVATION OF FACADE

Casa de las Muertes, Salamanca.

while grape, orange, citron and lemon filled the air with a perfume so fresh and sweet that we fell into a drowsy slumber, from which we were awakened by the tinkling of a distant guitar. The sun which made bright the garden had long since sunk behind the trees, and our little *chica* ran in to tell us that from the front windows we could see two tall fellows in wide sombreros and red sashes, who were trumming away on the guitar and mandolin.

"Oh *chica*," we exclaim, "can you dance the Tango?"

"Si Señor," she answered as her feet fell into the rhythm and her little body swayed backwards and forwards.

Dear old Hermanas Florinoa, little old maids of Toledo, with your beautiful *patio* and your lovely gardens—we

remember you kindly, and salute you even though thousands of miles now separate us!

I have often thought of these beautiful old houses of Spain and longed to get some of their spirit. Alas for us! the miserable pittance of God's earth vouchsafed to mankind in our cities seems to be limited by the pocket rule rather than the tape line, and the vistas that we are fated to get from any visionary *patio* is sure to be high brick walls or a board fence, and in any case the quarelling of our neighbors' servants.

Finally, a word in regard to that part of the architectural composition which forms so much of the interior glory of the Spanish work of which we have been speaking. In those days the

architect was in most cases responsible for the wonderful magnificence of stall, baldachin, retablo and reja, and in no country in the world are they so fine. But he could never have attained so faithful a carrying out of his designs if the Spanish workmen themselves had not been inspired with the feeling of true art in every fibre of their being. The wood-carver, the sculptor, the metal-worker and the painter were equally devoted to their profession and often rose to rare eminence. Such examples as the exquisite Renaissance monument of the son of Ferdinand and Isabella at Avila, the monument of Juan and Isabel in the chapel of Miraflores at Burgos, the wonderful screens at Avila, Toledo and Grenada, and hosts of others, are the noblest monuments that these men could leave posterity.

No less beautiful, too, are the rejas at Toledo, Seville, Cuenca, Grenada,

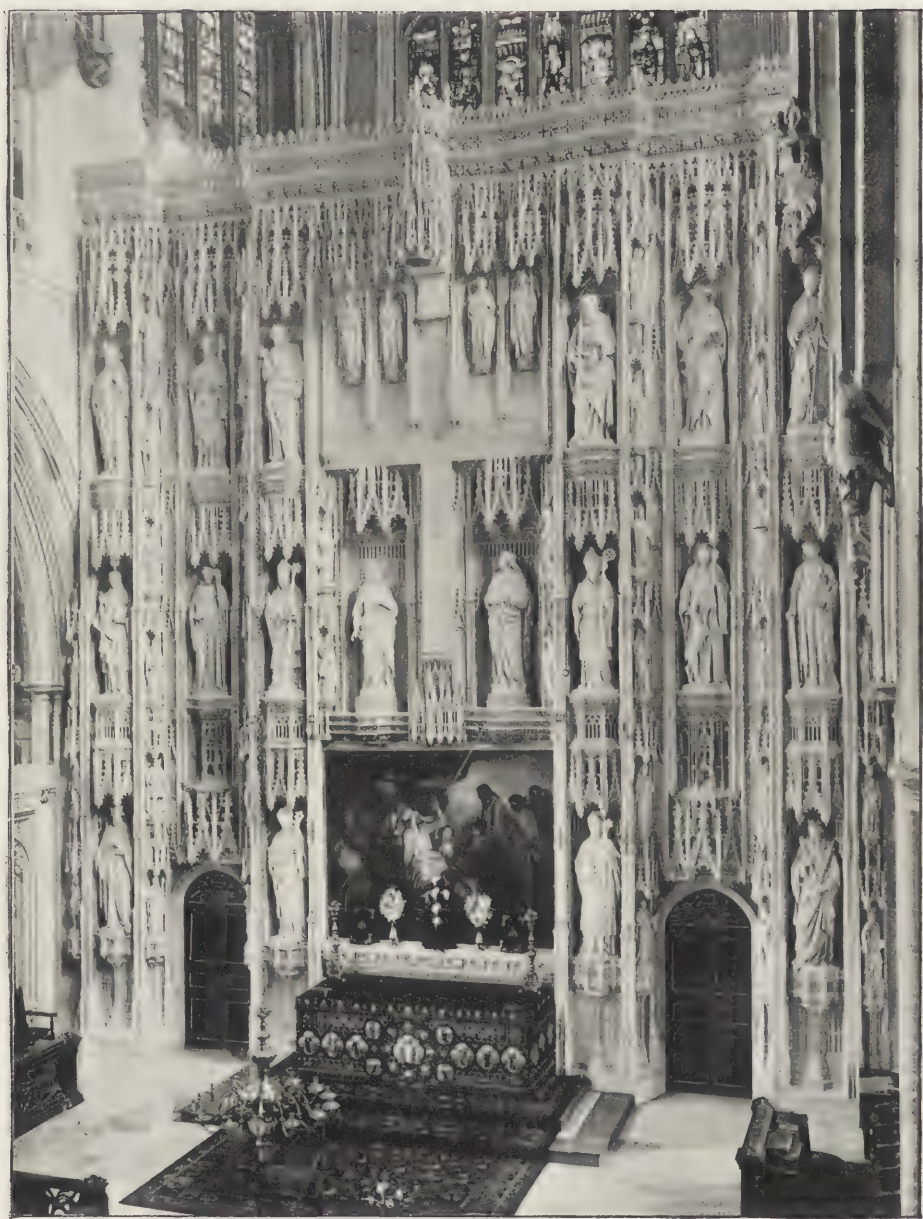
Burgos and Palencia. Their size is enormous, their ornamentation elaborate and richly designed, and excel any that I have ever seen in any other country. Some of them were of silver, and it is told how at the time of invasion they were painted in order to deceive the invader into believing they were of the baser metal.

In the above enumeration of the important architectural work of Spain it has only been possible to speak of the leading examples of the different eras, and but a word of each of them. Whether I have spoken of the best works of each era is a question that must depend largely on the ideas of different students. But there is no part of Spain that does not teem with interest, there are no cities that do not contain interesting material for study, and any one of these I have mentioned would take pages to properly describe in detail.

Charles A. Rich.

NOTE.—The cuts in the accompanying article have been made from personal sketches by the author, photographs, Prentice's Renaissance, American Architect and Die Baukunst Spaniens.





AN ENGLISH REREDOS OF THE FIFTEENTH CENTURY.
Winchester Cathedral.



THE COBLENTZ MOVABLE REREDOS OF REPOUSSE COPPER AND ENAMEL. TWENTIETH CENTURY.

CHRISTIAN ALTARS AND THEIR ACCESSORIES.

Part II.

A CHRISTIAN ALTAR, as demonstrated by the writer in a previous paper in this magazine, was originally a very simple piece of liturgical furniture, but as the faithful obtained greater freedom of worship, together with larger wealth, there were added to it a number of accessions; four of these have already been considered: the *predella*, the *antependium* or ornamental frontal, the *ciborium*, and the *re-table*; this leaves two of the most important ones to study, viz.: the *reredos* and the *tabernacle*.

The *reredos* (Fr. *arrière-dos*) is a screen or wall at the back of an altar, more or less ornamented, either forming part of the *re-table* or standing by itself. In the middle ages it was sometimes called a *postabula*, *retrotabularium* and *retro-altare*. Many archæologists believe the *reredos* took its rise from the decorated wall above and back of the tombs of the martyrs, in the catacombs, because these tombs were undoubtedly sometimes used by the primitive Christians as altars. Whatever may have been the origin, it remains a fact that, it was not in use to any great extent before the eleventh century, and when first introduced was a movable object. Moreover, it could not have been used in connection with the high-altars of cathedrals until after the change in their

orientation, which only began to take place in the twelfth century, as it would have hidden the priest from the people; nevertheless, there is no reason to suppose that it was not employed at a very much earlier period with side or secondary altars, and with the high-altars of oratories. That this last statement is more than a mere supposition is shown by the remains of *reredoses* in the chapels of the Lateran Baptistery at Rome, which date from the time of Sixtus III., who was pontiff from the year 432 to 440; also from other existing examples, among them a painted *reredos* of the eighth century above an altar in the crypt of Urbano-alla-Caffarella. The earliest form of the *reredos*, outside of the catacombs and crypts, was probably that of the *dossal*: a hanging of silk, damask or other textile fabric. This curtain was suspended, above and back of the altar, from hooks in the wall or ceiling of the sanctuary, and in some cases from the *arch-rod* of the *ciborium*. During the later middle ages it was changed with every change of the sacerdotal vestments, so as to conform to the color requirements of the feast celebrated; a custom still followed, even where picture tapestry *dossals* are employed, as in Sixtine Chapel at the Vatican.



A SILVER KEREDOS (FOURTEENTH CENTURY) IN THE CATHEDRAL AT FLORENCE, ITALY.



Saragossa.

A SPANISH REREDOS (FIFTEENTH CENTURY).



A PAINTED REREDOS IN THE CHURCH OF S. MINIATO AT FLORENCE.
Attributed to Giotto (A. D. 1276-1336).



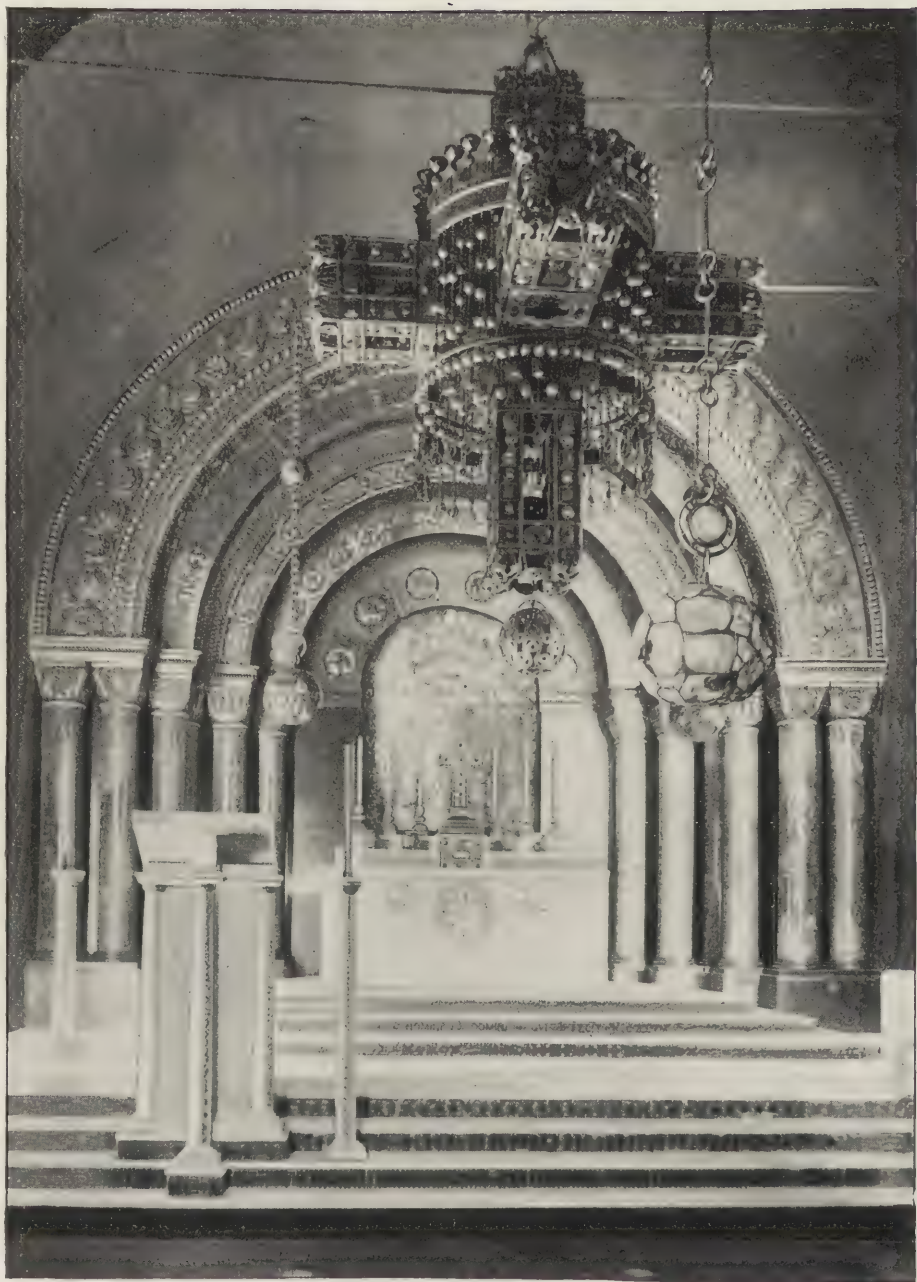
A FRENCH REREDOS OF THE RENAISSANCE AT HATTON-CHATEL.
Designed and made by Ligier Richier.



A SIXTEENTH CENTURY REREDOS IN THE CHURCH OF S. ANNA.

Naples, Italy.

Designed and made by Giovanni Merliano de Nola.



A MOSAIC ALTAR AND REREDOS IN THE TIFFANY CHAPEL.

Designed by Louis C. Tiffany.

The *reredos* at first was not, as was said above, a fixed construction, and as it was only used on great solemnities or on the principal festivals of the ecclesiastical year, it was made of a size which permitted it to be easily moved.

Of these movable *reredoses* the most wonderful one now in use is the *Pala d'Oro* belonging to the high-altar of Saint Mark's Church at Venice. It is of Byzantine workmanship and was begun in Constantinople about the year 977 for the then doge Pietro Orseolo, but was not completed till the reign of Ordelafo Falier in 1105, and was further embellished under the doge Pietro Ziani (1205-1229), and again in the fourteenth century, when by order of Andrea Dondolo, it was augmented in size and ornamented with a gothic frame work. This beautiful *reredos* is composed of silver and gold, enamels and precious stones, repoussé and chiseled work, and is indeed a triumph of the goldsmith's art. In the centre there is a figure of Christ in low relief, enriched with enamels, holding in one hand an open book of the Gospels while the other is raised in benediction, and around Him are grouped the four Evangelists within circular medallions. In other parts of this work of art are portrayed the archangels, prophets, and apostles, together with scenes from the life of the Divine Master. There are also many "niello" inscriptions both in Greek and Latin. Besides the *Pala d'Oro* there are a number of *movable-reredoses* in the various churches and museums of Europe, the most celebrated ones are the golden *reredos* of Bâle now in the Cluny at Paris, the repoussé copper and enameled *reredos* of Coblenz, the gilded copper one in the Church of Saint Germain des Prés, and one belonging to Westminster Abbey. The last is a work of the thirteenth century: a wooden panel ten feet long by three feet high, carved, overlaid with vellum, painted, gilded and partly covered with glass. It is divided into five compartments, the centre and end ones are filled with full length figures of sacred personages beneath gothic canopies, in the two remaining there are eight subjects: four in each panel, inclosed in star like medal-

lions. Toward the end of the sixteenth century *movable-reredoses* went almost entirely out of use, fixed ones taking their place, even the high-altars of cathedrals were very generally furnished with them, the same as the altars of parochial churches, private and monastic chapels.

The largest and most remarkable *fixed-reredoses* are found in Spain, many of them extending across the east end of their respective churches from one side of the sanctuary to the other, and from the floor up to the roof, for example: That of the cathedral of Toledo follows the line of the apse, from the Epistle to the Gospel side, and attains a height of over fifty feet. It is a mass of the most intricate, at the same time delicate, Gothic carving, endless in detail, with numerous figures of angels and saints in conjunction with eighteen scenes from the life of Christ. Some of the Spanish *reredoses* are provided with a circular lunette, surrounded with rays of glory, for the purpose of exposing the Blessed Sacrament to the adoration of the people; in other words, they are made by this ingenious arrangement into huge and beautiful *ostensoria*.

The *fixed-reredos* in both Italy and France usually forms a frame or setting for a painting, a bas-relief or a group of sculpture; in Germany and the Low Countries it is often in the form of a triptych, consisting of three compartments the centre one fixed, the others made to fold upon the central panel like doors, which are only opened at such times as the holy offices are celebrated. Upon the central panel there is either a painted or carved picture and upon the inside of the doors. The folding *reredos* is also to be found in Italy, in fact the most artistic ones in the world are those which were made by Beato Angelico da Fiesole (1387-1455). The following is a passage from an agreement, of 1433, between that artist and the Guild of Joiners at Florence to make for them that magnificent *reredos* now in the gallery of the Uffizi, with which all lovers of art are familiar: "The Guild have agreed with Fra Guido, called Fra Giovanni of the Order of S. Dominic of Fiesole, to



A PAINTED WOODEN REREDOS OF THE FOURTEENTH CENTURY.
From the desecrated Church of San Giovanni in Conca at Milan.



A REREDOS IN THE CHURCH OF S. ANNA, AT NAPLES, ITALY.

Designed and made by Benedetto da Marjano (A. D. 1442-1498).

paint a *reredos* of our Lady, to be painted inside and outside, with colors, and diversified with gold and silver—the best and finest to be found—with all his skill and industry: and for all and for his pains and labour, to have one hundred and ninety florins of gold, or what less he can in conscience, and with the figures in his drawing.” The Fra Giovanni was faithful to this agreement and he gave the Guild a masterpiece of Christian art: In the centre panel he painted a life-size figure of the Blessed Virgin, enthroned, and clothed with a mantle of an azure tone adorned with gold embroidery, and standing on her knees the Holy Child, clad in a tunic of great beauty. Around the Virgin and Son, within the frame, are twelve adoring angels, playing on various musical instruments, gracefully poised, floating in the air, refulgent with the light of Heaven, and all of this on a background of burnished gold. On the inside of the doors are representations of John the Baptist and

S. Mark, on the exterior S. Peter and S. Mark. The Evangelist is on both sides because he was the patron of the Guild, and he is associated with S. Peter, as he was believed to have written his Gospel under the dictation of that Apostle.

This beautiful *reredos* is most charmingly alluded to by the late David Gray in the following lines from a poem on Fra Angelico:

“All shut, such reliquaries stand,
Rich paintings on each folded lid
That keeps the inner beauty hid,
And almost one is stopped to gaze,
And half—before the doors expand—
Would lift the censor of his praise.
But, open; and there straightway beam
Such glories of the fairer dream.
All other light is quenched than its.
Unclouded glows the golden air,
And ringed with heaven’s own aureole,
The very deep of beauty’s soul
Throbs visible, where the Virgin sits.”

During the Ages of Faith in England the *fixed-reredos* was largely architectural, made up of decorative statues,



ALTAR AND ROSSEL, ST. ANDREW'S CHURCH.

Stamford, Conn.

Designed by Henry J. Hardenbergh.



Salisbury Cathedral, England.

ALTAR AND REREDOS.

Designed by Geo. Gilbert Scott.

niches, tabernacle work, buttresses, crockets and pinnacles, but very few of these now exist, as they were ruthlessly demolished by the Reformers. Since the Oxford Movement or so-called Catholic revival in the Anglican Establishment, *reredoses* of most ornate and sumptuous character have come in vogue both in parish churches and cathedrals.

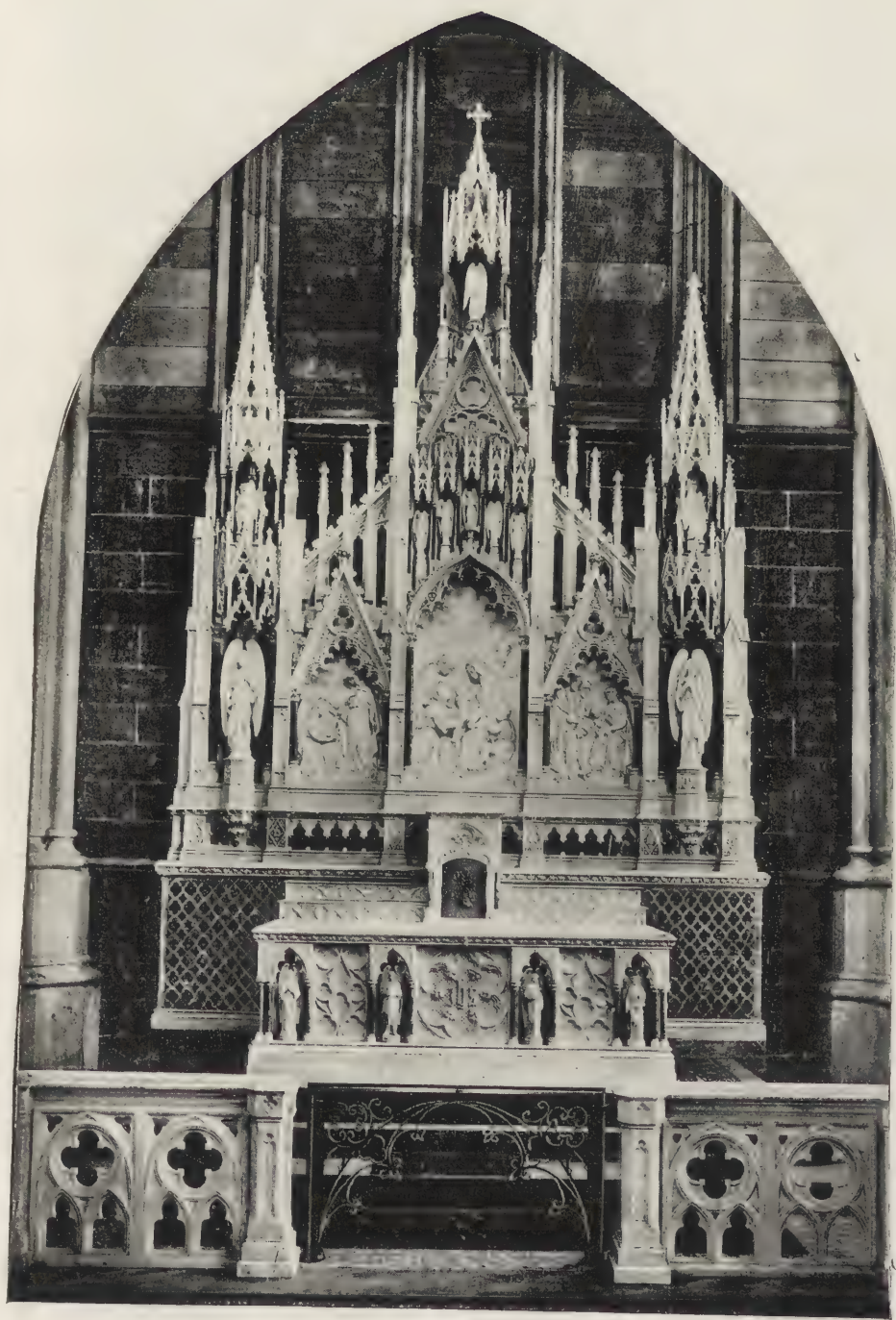
A clever and often amusing writer on architectural subjects, when speaking of modern English *re-tables* and *reredoses*, very justly says, their "commonest faults are tameness and vulgarity, generally separated, but occasionally most ingeniously combined. The first is comparatively harmless; its usual symptoms are lambs, doves, pelicans, calves, eagles, lions, angels (so called), interlacing triangles, As, Js, IHSs, XPCs, etc., spotted about without rhyme or reason. Beyond what may be gathered from the vague statement that they are *symbolical*, the information as to what they symbolize, or in what way they are suitable to their places, can rarely be obtained; as for the two monograms, the first is almost invariably interpreted wrongly, and the other, although possessed of several nicknames, is usually a com-

plete poser. The vulgarity is, I am sorry to say, often wilful and deliberate, and belongs to a subject too large to be entered upon in this place. It is one of the least hopeful features of modern art that there exists amongst us a large number of men, some of them of real, though perverted ability, who mistake coarseness for vigor, exaggeration for imagination, and very ugliness, if only it be sufficiently startling, for originality." In addition to the above statements and accompanying illustrations the following points are all the architect needs to remember concerning *reredoses*.

I. A *fixed-reredos* may either be a part of the *re-table*, or stand upon a base of its own, or against the east wall of the sanctuary, free of the altar, but under no circumstance must it rest or encroach on the *mensa*.

II. A *reredos* may be constructed of one or many materials: stone, marble, alabaster, wood, earthenware, mosaic and metal.

III. Its form should correspond with the architectural surroundings, and its size with the rules of proportion. It may be as long as the *re-table*, or extend beyond the same, or across the entire sanctuary, and as high or low as



A SIDE-ALTAR, WITH REREDOS AND TABERNACLE IN THE CATHEDRAL.
New York. Designed by Renwick, Aspinwall & Renwick.



A FRENCH MÆVAL SUSPENDED-TABERNACLE.

good taste and harmony suggest. Sometimes, where there is a *tabernacle*, it is well to divide the *reredos*, so that it forms only a background for the *re-table*.

IV. It may be decorated with paintings, carvings, sculpture, gems, enamels, and mosaics, singly or combined, but whatever treatment is employed it should be a connective scheme of composition—all parts in true relationship to one another and to one common motive.

V. There is a rubric requiring all pictures and statues on or about an altar to be covered during Passion-tide with a violet veil, hence if there are any in a *reredos* some arrangement must be provided by which to hold or hang these veils. In Rome it is the custom to place a veil at all seasons over a *reredos* picture, which is only raised on Sundays and feast days.

VI. It is well to remember in planning a *reredos* that pinnacles and slight finials are to be avoided in the crowning finish, as they are apt to present the appearance of a row of spikes, no matter whether they stand against light or shadow. A horizontal cornice is preferable.

The next division of the subject of this paper is the *tabernacle*, in some ways the most interesting altar accessory, and by far the most difficult to study, both in its historical and architectural development, because of the obscurity thrown about it by theological controversialists. *Tabernacle* is a word of mediæval origin and is derived from the Latin name for tent: *Tabernaculum*. It is used to denominate the receptacle or closet in which the Sacrament of the Eucharist is reserved, and was given to it because this receptacle in the middle ages was usually covered with a veil of tent-like form. Its adoption may possibly have been suggested by the tabernacle of the Old Law, which, in fact, was a tent, constructed by the Jews, under the direction of Moses, and used by the Israelites as a covering for the Ark, and as a place of worship during their wandering in the wilderness. There are a number of reasons, however, which point to the belief that both of

these suppositions were factors in the choice of the word: the first was the spontaneous one, the second was the symbolic sanction of the first, as the tabernacle of the Old Law was the home of the figure of the substance, while that of the New Law was believed to be indeed the abode of the very substance under the veil of the sacramental species.

The Jewish tabernacle was the *tent of the testimony*, the *Beth-el*, the meeting place of God and man: *There I will meet thee. And the Lord spake unto Moses, saying, speak unto the children of Israel—let them make me a sanctuary; that I may dwell among them: according to all the likeness (design) of a tabernacle which I will show thee.* These words, taken from the twenty-fifth chapter of the Book of Exodus, are followed by the most minute architectural specifications for a simple but beautiful and rich tent-like construction. The Christian, believing in the *real presence*, argued that if it was right to embellish the resting-place of the shadow, there was more reason to beautify the dwelling of the divine Eucharist. Acting on this conclusion, or from the principles which underlie the same, the Christians of various periods and countries made their tabernacles peculiarly precious, expending a wealth of art upon their form and ornamentation.

Just the time in which it first came into use cannot be determined with any great precision, although it must have been employed, under some form, from the earliest ages, for it is an historic truth that the Eucharist was then reserved, that is if we can give any credence to the testimony of Tertullian (A. D. 195), S. Cyprian (A. D. 248), Eusebius (A. D. 325), S. Optatus (A. D. 368), St. Ambrose (A. D. 385) and many other Fathers. Without the practice of reservation the 13th Canon of the First Ecumenical Council, held at Nice in the year 325, would have little meaning, as it forbids to deny the Eucharist to any one at the point of death, therefore it must have been kept so that it could be had at a moment's notice, as in the case of Serapion related by Dionysius of Alexander (A.

D. 251), who says that Serapion, an aged believer, was "taken sick, and continued three days in succession speechless and senseless. On the fourth day, recovering a little, he called his grandchild to him, and said—'call one of the presbyters to me.' Saying this, he again became speechless. The boy ran to the presbyter. But it was night, and the presbyter was sick." As the presbyter could not go to Serapion, Dionysius goes on to say: "I gave the boy a small portion of the Eucharist, telling him to dip it in water and drop it into the mouth of the old man. The boy returned with the morsel. When he came near, before he entered, Serapion having again recovered himself, said, 'Thou hast come, my son, but the presbyter could not come. But do thou quickly perform what thou art commanded, and dismiss me.' The boy moistened it, and at the same time dropped it into the old man's mouth. And having swallowed a little, immediately expired."

The first council to promulgate rules having a direct bearing on tabernacles was that of Constantinople, held under the presidency of Mennes (A. D. 536). In the acts of this council there are allusions to gold and silver tabernacles, which were made in the shape of doves and suspended over altars. More facts of the same nature are to be found in the canons of the Second Council of Tours (A. D. 566-567), and in those of other councils, but as they are largely theological and have very little to do with the architectural side of tabernacles, they will not be quoted.

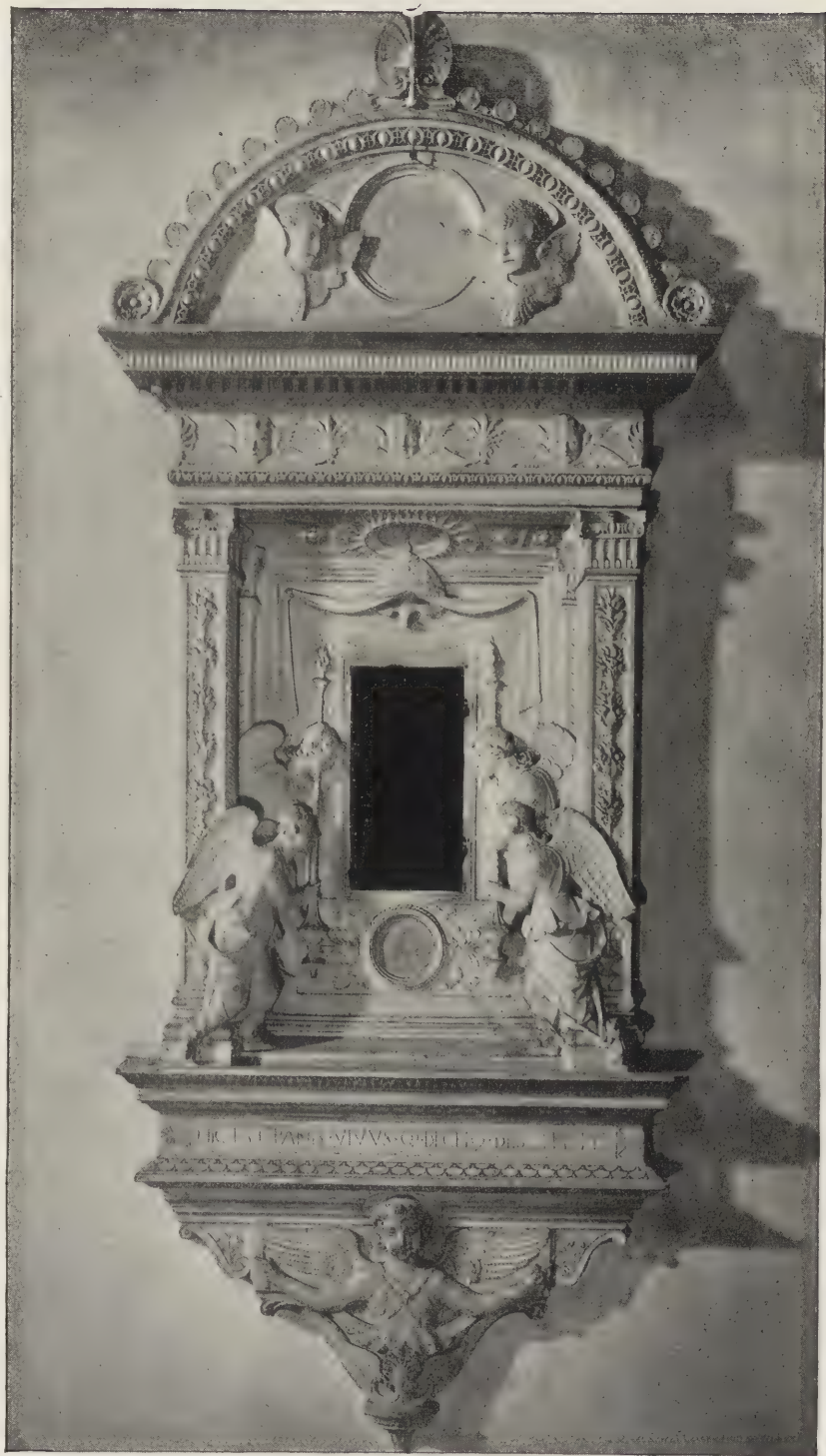
It might be well, however, before leaving this part of the subject, to state that in the early days of the faith the Reservation was sometimes kept under both kinds. This is shown from a letter of St. John Chrysostom to Innocent I. (A. D. 402-417), in which he complains of the violence done to his person and church. He writes: "Toward the evening of Holy Saturday a numerous troop of soldiers threw themselves into the church, driving away the clergy who were with us. Having penetrated as far as the place where the Holy Things were

reserved, they overturned all that was within, and in the great disorder the blood of Our Blessed Lord was spilt upon their clothes."

It cannot be said with absolute certainty in just what form or of what material the primitive tabernacles were made, but we do know that many of the very early ones were in the shape of boxes, vases, doves and towers, and that the materials employed in their construction were various, yet always of value: gold, silver, copper, wood, ivory, crystal, pearls and gems. They were small, movable and often suspended above the altar by the means of chains, either from the under side of the dome of the *ciborium* or from the soffit of one of its arches or from a bracket, and so arranged that they could be raised or lowered; but sometimes, probably more often, they were kept in cupboards or aumbries built in the wall of the church, and toward the end of the middle ages they were in some countries placed upon the *re-table*; and ultimately became fixtures, either in connection with an altar or on one side of the sanctuary. In many cases, and always when suspended, they were enveloped in a tent-like covering of cloth or silk.

Among Christian archæologists there is but little doubt that from the first both movable and fixed tabernacles were in use contemporaneously, although the portable and suspended variety were by far the more common. The oldest existing fixed tabernacle, a work of the fifth century, is in the so-called Temple of Clitumnus, now the church of S. Salvatore, near the village of Le Vene in Italy. It is a marble niche, twelve and a-half inches wide by fourteen deep and a little over twenty-four in height, and is closed by a pair of doors turning upon pivots, the leaves, three inches in thickness, shut against a narrow rabbet.

The very earliest portable tabernacle have long since disappeared, a fact not to be wondered at, as they were almost always made of precious materials and hence excited the greed of the irreligious. The outward manifestation of this form of covetousness began with the apostacy of the



A WALL-TABERNACLE OF MARBLE IN THE CHURCH OF THE SANTA CROCE.
 Florence, Italy. Designed and made by Mino da Fiesole, A. D. 1400-1486.

Emperor Julian, in the year 362, who, pretending to be scandalized by the magnificence of the Christian sanctuaries, swept the valuables of the church into the coffers of the state. Subsequently he had many imitators. As previously stated, the first *tabernacles* were portable and usually in the form



A Twelfth Century Tabernacle.

of a box, constructed of costly substances, but later they were made in the semblance of a tower, often of wood, painted, gilded and otherwise enriched. One of these wooden towers, a tabernacle of the twelfth century, is preserved in France, and is thus described: It is made of some hard

wood, octagon in shape, divided into two stories, separated by a floor, and each floor is provided with a door; the sides of the octagon are perforated and glazed with a greenish glass; over the windows or upper row of perforations there is the following Latin inscription, one word on seven of the faces of the octagon: *Qui—Manducat—Hunc—Panem—Vibet—In—Eternum*; and the tower stands upon a wine-glass-shaped pedestal and is crowned with a cross. It is believed by some that this two-storied tabernacle served a double purpose: the lower floor being designed to hold the Reservation, while the upper one was used for the Exposition of the Blessed Sacrament, but this could hardly have been the case, that is, if the tower is a work of the twelfth century, as the rite of exposition was not in use at that time.

The box and tower tabernacles, as already stated, were commonly kept in an aumbrye or a small cupboard in the wall of the sanctuary or in the sacristy, from whence they were brought to the altar at the time of the communion of the faithful; and in the later middle ages they were often placed upon the *re-table* of the high-altar, to ultimately become fixtures, and from this usage the modern altar-tabernacle took its rise, and the detached sanctuary tabernacle from the aumbrye.

Before considering in detail the *fixed-tabernacle*, it will be well to study the suspended ones, although they are not now in use, yet, it is well to be somewhat familiar with the whole subject.

Up to a late date in the last century it was a common custom throughout Catholic Europe, and in England before the advent of the change of religion, to suspend, inclosed in a box or dove-like tabernacle, the Eucharist. This form of tabernacle was hung above the altar by the means of chains, either from the *ciborium*, or the roof of the sanctuary, or from a bracket projecting from the *reredos*, and counterpoised so that it could be lowered or raised at will, in the same manner as sanctuary lamps are now. Before the days of Henry VIII. there hung over the high-altar in Durham Cathedral a

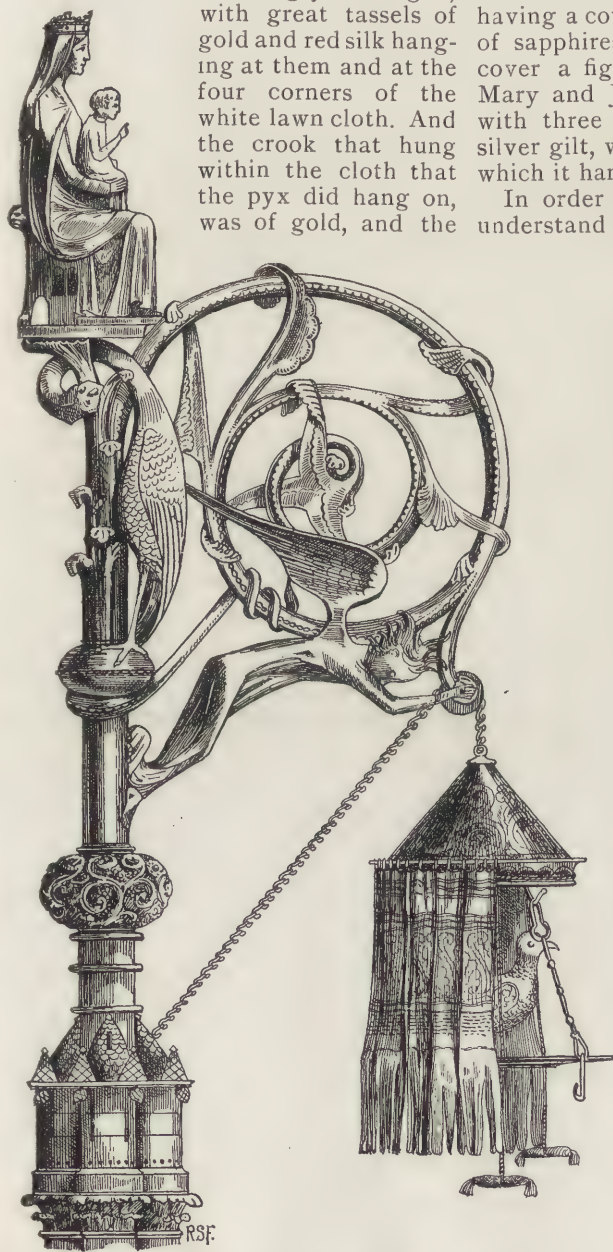
tabernacle of "most pure gold, curiously wrought of goldsmith's work. And the white cloth that hung over the pyx ('tabernacle') was of very fine lawn, all embroidered and wrought about with gold and red silk. And four great and round knobs of gold, marvelous and

cunningly wrought, with great tassels of gold and red silk hanging at them and at the four corners of the white lawn cloth. And the crook that hung within the cloth that the pyx did hang on, was of gold, and the

cords that did draw it up and down were made of fine white strong silk."

Suspended tabernacles were not always of metal: in St. George's Chapel at Windsor, in the year 1385, there hung one made of ivory, "garnished with silver plates, gilt, with a foot covered with leopards and precious stones, having a cover of silver gilt with border of sapphires, and on the top of the cover a figure of the crucifix, with Mary and John garnished with pearls, with three chains meeting in a disk of silver gilt, with a long silver chain by which it hangs."

In order that the reader may fully understand just what these *tabernacles* were like the accompanying illustrations from A to D have been drawn: A represents a mediæval tabernacle suspended from a bracket; B the dove (pyx) belonging to the same, a work of the twelfth century, while C and D illustrates the bok form with its veil open and closed. This variety of tabernacle was universally used throughout England prior to 1555, when Cardinal Pole took measures to introduce fixed ones. He says, let the tabernacle "be raised and fixed in the middle of the high-altar, if it can conveniently be done, so that it cannot easily be moved, otherwise in the most convenient and honorable place and nearest to the high-altar which can be found." To-day there are no remains in England to show that this counsel was ever complied with, but even if it had been, the drastic laws against the use of altars and their appurtenances, laws enacted by Edward the Sixth and Queen Elizabeth, would have removed all traces of them. A very good idea of the last form named by Cardinal Pole



(A) Suspended-Tabernacle.

can be got from the ruins of *wall-tabernacles* still to be seen in both Banffshire and Aberdeenshire in Scotland. Dr. Frederick George Lee describes, in "Notes and Queries," for May, 1880, two of these as follows: In the church at Cullen, in the chancel, much of which is now destroyed, in the north wall of the sanctuary there is a *Sacramental Tabernacle*, a work of the sixteenth century. Its height is six feet ten inches by three feet in width. It consists of a rectangular parallelogram, with a somewhat debased cornice at the top, and the whole of this structural ornament being surrounded by bold and effective mouldings. Below the cornice is an inscription which stands thus—

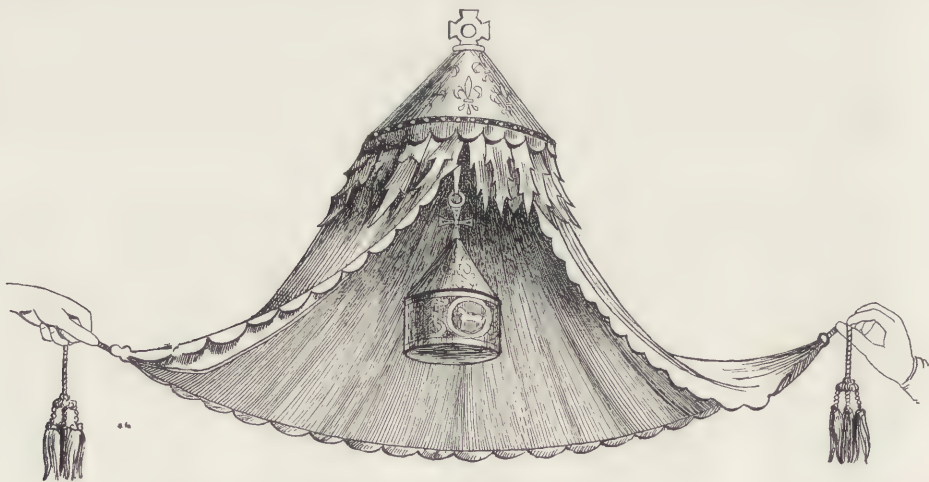
Caro . Mea . Vere . Est . Cib .
Et . Sanguis . Me . Vere . E . Pot .
Q . Manducat . Mea . Carne . E . Bib .
it . Meu . Sanguine . Vivet . I . Eternu .

Below this are represented, in very telling and effective sculpture, two winged angels, in amices and girded albs, with crossed stoles, holding with both their hands a monstrance containing a representation of the Host.

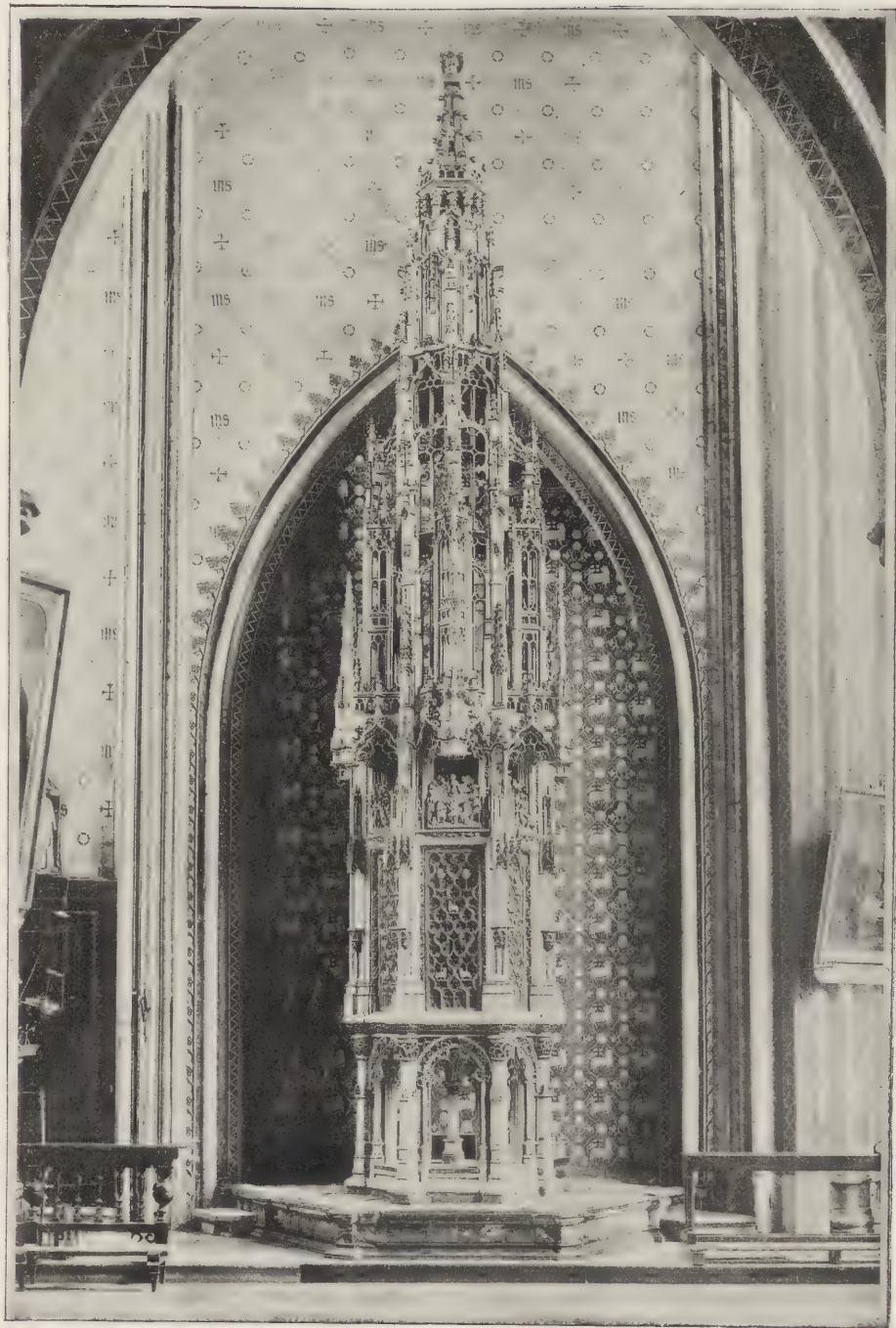


(B) The Pyx of a Suspended-Tabernacle.

On this latter a crucifix with our Lady and S. John are represented. The recess, the actual tabernacle, is sixteen inches high by fourteen wide and twelve deep. The door is gone, although the marks of the hinges can be seen. Immediately over the recess are two metal rings, evidently intended to suspend the rod on which the *tabernacle-curtain* was hung. At Deskford an-



(C) A Box-Tabernacle. The Vail Open.



DETACHED-TABERNACLE OF WHITE MARBLE.

Erected in S. Jacques Church at Louvain, Belgium, in 1538.

From the design of Gabriel van den Bruyae.

other tabernacle of about the same age still exists. In this the legend is at the bottom and is also taken from the sixth chapter of S. John's Gospel. Below this are the arms of Alexander Ogilvie and Elizabeth Gordon, with their respective monograms, and the following legend:

This . Sacrame't . Hovs . Maid . To . Ye .
Honor . Of . Ye . Living God . By .
Ane . Noble . Man . Alexander .
Ogilvy . Of . Yat . Ik . & . Elizabet .
Jordon . Hys . Spovs . The . Year . Of . God . 1551.

The tabernacle is rectangular, the door is gone, but the hinges remain, and there are marks above where the rail was suspended, etc.

In France down to the end of the last century *suspended-tabernacles* were in general use in the great cathedral and abbey churches, but on the restoration

of religion, after the Revolution, the fixed form took their place. There were many reasons why this change was made, among them the accidental falling of the tabernacle, which happened very often, and then again the frequency of robberies where *suspended-tabernacles* were used. So common was this crime in England during the reign of Henry V., that he caused to be enacted a law, in 1419, that even if any man, except a priest, should so much as touch the tabernacle he was "to be drawn and hanged therefor." In Northern and Central Europe the *detached-tabernacle* found its greatest and fullest development.

In all probability it was originally evolved from the *aumbrye* or wall locker, found in all mediæval churches in which *portable-altars*, *portable-tabernacles* and other sacred objects were placed for safe keeping. Speaking of these wall lockers or closets an old author, writing in the year 1555, says: *Upon the right hand of the highe aultar, that there should be an almorie either cut into the wall or framed upon it, in the whiche there would have the Sacrament of the Lorde's Bodye; the Holy Oyle for the sicke, and the chrismatorie alwaie to be locked.*

The most noted constructional and detached-tabernacles are in Nuremberg, Cologne and Ulm: the one in Nuremberg is in the church of S. Lawrence, and was both designed and built by the German sculptor, Adam Krafft (1493-1500). The tabernacle stands on the Gospel side of the choir, is made of stone and the lower part is surrounded by a gallery, which is approached by steps leading to the door of the receptacle. Above the receptacle, which is surrounded by ornamented brass panels, the centre one forming the door, there rises a canopy fifty or more feet in height and terminating in a finial made in the form of the crook of a crosier. The canopy is composed of a multitude of pinnacles, of niches and panels filled with the images of saints and scenes from the life of Christ, together with many symbolic devices.

The final evolution of the *tabernacle* has resulted in giving us two, and only two, distinct forms, that is in the churches of Western Christendom: one a fixture in connection with an altar—a part of its construction—and the other a movable box. This last is kept in the sacristy for the purpose of holding the Eucharist whenever it becomes necessary for one reason or another to remove it from the *altar-tabernacle*, as for example on Holy Thursday and Good Friday, in churches where there is no altar especially set apart for the Blessed Sacrament, but when it is so used it is removed from the Sacristy to a side-altar in the church.

The ecclesiastical laws governing the modern constructional tabernacle, have more or less to do with its archi-



(D) A Box Tabernacle.
With Vail Closed.



A TABERNACLE OF THE SIXTEENTH CENTURY.

In the Cathedral at Fiesole, Italy.

Designed and made by Andr a di Piero di Marco Ferracci.



REREDOS AND TABERNACLE IN THE CHURCH OF SAN BARTOLO AT SAN GEMIGNANO.
Designed and made by Benedetto da Majano.

tectural requirements, and may be summed up as follows:

I. As the Eucharist can only be reserved in one place in a church, at one and the same time, hence it is unnecessary to have more than one tabernacle; if the church is large, this should form a part of an altar dedicated to the Blessed Sacrament, but if, on the other hand, it is small, it may be built in connection with the high altar.

II. A *fixed-altar-tabernacle* is always built immediately back of and above the *mensa*, midway between the Gospel and Epistle sides, with the *re-table* abutting against its sides.

III. The form of a modern *fixed-tabernacle* is ordinarily that of a square box surmounted by a *ciborium* or canopy, which is usually crowned by a cross, but there is no absolute law concerning its shape, consequently it may be made square, rectangular, octangular, pentangular, semi-circular, circular or any form which will best agree with

the altar from an architectural standpoint.

IV. The materials used in building *tabernacles* are as various as those employed in making altars, but when they are of stone or marble they must be lined with wood, and the wood upholstered with white silk, in such a way as to cover the sides as well as the top and bottom of the interior. This rule holds good in the case of metal *tabernacles*, except where the metal used is gold or silver. From this ruling it will be seen that either gold or silver can be substituted for wood and silk as a lining for the receptacle.

V. The doctrine of the Real Presence in its very nature demands that the *tabernacle* should be the most precious and striking object in the church, therefore it may be enriched with gilding, carvings, inlays, enamels, gems, and symbolic decorations; the door should be the richest part and ornamented with a device relating to the



A SILVER ALTAR CROSS, FOURTEENTH CENTURY.
In the Cathedral at Florence, Italy.

Eucharist; the most appropriate are the grape, the vine, wheat, a pelican, a chalice, the Holy Name or representation of the Last Supper.

VI. The door of the *tabernacle*, the only opening allowed into the receptacle, must be solid, never glazed, furnished with a lock and key. The door may consist of one or two leaves, when single it opens from the Gospel swinging to the Epistle side, and when double the leaf on the Epistle side opens first.

VII. In the receptacle, just behind the door, must be hung a veil of white silk, divided in the middle.

VIII. The outside of the *tabernacle* should be so arranged that it may be enveloped with a veil, opening in the centre. This veil may be made of any rich textile fabric, if there is only one it must be white; but it is counseled to have four: white, red, green and violet, in order that they may be changed with the sacerdotal vestments.

IX. The top of the *tabernacle* above the receptacle and beneath the *tabernacle-ciborium* must be a flat, plain surface, upon which nothing should be placed save a movable crucifix, or the *ostensorium* at the time of exposition.

X. The only finish allowed on the top of the *tabernacle-ciborium* is either a cross or a figure of the Second Person of the Trinity.

XI. When it is possible the receptacle should be made fire-proof—an easy matter in this country, as there are several firms who manufacture safes for this purpose.

XII. The receptacle should never be less than ten inches high, and its floor flush with top of the rabbet against which the door closes.

In addition to the accessories already considered there are a number of others with which the architect ought to be conversant, as they may mar or greatly enhance the beauty of his altar; hence he should study them in their relationship to the general design. Among these minor accessories are the *credence* and the altar-furniture—the last consisting of a *cross* or *crucifix*, eucharistic and canonical *candlesticks*, *reliquaries* and flower *vases*.

A *credence* is a niche, shelf, or table

for the reception of everything necessary for the service of the altar—such as the chalice, the crewetts, the missal, etc. It is always placed on the Epistle side of the sanctuary in or against the south wall, or affixed to the *reredos*, but only when the *reredos* extends laterally beyond the *mensa*. In all cases it should agree with the altar both in its architectural lines and ornamentation, as well as material and proportion. Good taste, however, is the only canon governing the form, material, construction and decoration of a stationary *credence*. The table or movable *credence* must be made of wood or metal, square in form, the top resting upon four legs, and when in use placed between the first step of the *predella* and the *sedilia*. Its only allowable ornamentation is a cover of plain white linen cloth extending around all four sides and reaching to the floor.

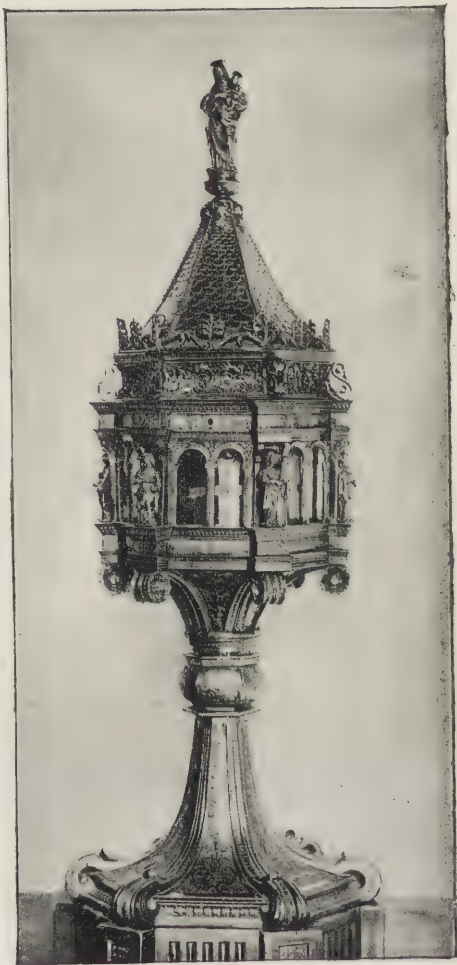
The most important instrument forming a part of the altar-furniture is the cross or crucifix. Just when it was first used in connection with the Eucharist celebration is unknown. It is, however, a justifiable supposition, that it was employed in the very first ages of the faith, as it was greatly venerated by the primitive and early Christians, who signed themselves with it, embroidered it upon their garments, marked it upon the walls of their house and the tombs of the dead. Tertullian, writing in the year 245, says: "In all our travels and movements, in all our coming in and going out, in putting on our clothes and shoes, at the bath, at the table, in lighting our lamps, in lying down, whatever employment occupies us, we mark our forehead with the sign of the cross." And S. John Chrysostom tells us that in his time (A. D. 407) it was everywhere to be seen that it was "highly esteemed and held in honor, in the house, upon walls and on roofs—upon the highways—on books and on arms—upon golden and silver vessels, etc." While we learn from the author of the poem "De Passione Domini," written early in the fourth century, that it was customary to have a representation of the crucified Redeemer in the churches. He says:

*Who'er thou art that seek'st this temple's bound
 Arrest thy steps ; and, ere thou gazest round,
 O look on me : without one fault of mine,
 I suffered for thy sinfulness—thy crime.
 Mark how these hands with savage nails are
 bored,
 These limbs distent ; this back with lashes gored.
 See where the lance has probed my heaving side ;
 See how the wound pours forth a crimson tide ;
 See how these feet of mine are dug, and how
 Blood stains each limb, and trickles from my
 brow.*

It is without doubt true that the primitive Christians at first abstained from making a literal representation of the crucifixion or even of the cross, hiding it from the eyes of the uninitiated under pictures of every-day objects, such as an anchor, palm and monogram, but after the abolition by Constantine of the punishment of crucifixion it was no longer concealed—it ceased as a punishment, it remained as a glory. Nevertheless the steps were slowly taken and with hesitation: at first the cross was plain or bare, but concealed under an ornamentation of flower and jewels; then an image of a lamb was placed upon its face at the intersection of the arms, as a symbol of the *Lamb of God that taketh away the sins of the world*; then a bust of Christ took its place; at last the entire figure was fixed to a plain cross, but clothed and sometimes crowned. It was not until after the publication of the 82d Canon of the Council of Trullo, held in the year 692, that the crucifix with the naked, pierced and suffering body of the "World Ransom" became universal throughout the Church. The law reads as follows: "We pronounce that the form of Him who taketh away the sins of the world, the Lamb, Christ our Lord, be set up in human shape on images hereforth instead of the Lamb formerly used." A hundred years after this we find Adrian I. insisting upon a strict adherence to the same ruling: *We, he says, order that the true Lamb, our Lord Jesus Christ, be represented on the Cross in human form instead of the Lamb as of old.*

The earliest representation of the crucifix in existence is the well-known anti-Nicene caricature: a rude scrawl,

scratched on the wall, in a guard-room on the Palatine at Rome; while the oldest plastic crucifix is one that once belonged to the Empress Pulcheria (A. D. 414-453), now preserved in a monastery on Mount Athos. The Pulcheria cross may have been intended to be



An Altar Reliquary (Fifteenth Century). Italian.

used in connection with an altar, although this is doubtful, as the custom at the time was to suspend a plain cross from the underside of the *ciborium* in conjunction with the pyx, and it could not have been set on a *re-table*, because there was no such thing at

that period; yet, it may have been, in violation of the canons, placed on the altar itself, an irregularity not uncommon and which caused Leo IV., at a later date (A. D. 850), to issue a decree against the practice: *Let nothing, he said, be placed on the altar except reliquaries and relics, the Gospels and the box with the Body of the Lord for the viaticum of the sick.* In a number of very early manuscripts there are pictures of the celebration of the Sacrifice without a cross either suspended or on a *re-table*, but a processional cross, held by an attendant standing near the altar, takes its place. In fact there is abundant documentary evidence, both pictorial and written, to show that a cross was used, almost, if not from the first, in connection with the altar. If the evidence is not always direct, it is at least as strong, although indirect, as in the case of the Venerable Bede when giving an account of the return of Paulinus into Kent in the year 633; he says, the saint brought with him among other things "a large golden cross, and a golden chalice, dedicated to the use of the altar."

The monumental witnesses are not so great, that is, they do not date back as far, but from the tenth and the following centuries there are many, except in England, where hundreds of crucifixes were wilfully destroyed and broken by the commissioners of the crown during the years between 1550 and 1570. The most beautiful examples of altar-crosses of the tenth, eleventh, twelfth and thirteenth centuries are to be seen in the cathedrals of Hildesheim, Pise, Aix-la-Chapelle and Namur; and in the South Kensington Museum there are a number: Byzantine, French, Italian, German, Spanish, Flemish, Russian and Abyssinian, dating from the tenth to the nineteenth century, and in all kinds of materials, gold, silver, copper, bronze, ivory and wood. The one marked 7234 on the South Kensington catalogue is a work of the twelfth century; the cross is over two feet high, made of copper gilt, encrusted with enamels, the corpus is in full relief, and the whole is in the style of the Rhenish-Byzantine school of ornament.

The study of altar-crosses from an archæological standpoint is most interesting, but as it is of no practical concern to the altar builder of to-day, except in a general way, more space cannot be given to the subject. It is sufficient for the architect to know that every altar, at which the Eucharist is celebrated, is now required to be furnished with a cross. The symbolic reason for this is easy to read, for if the altar is the Calvary of the "Continual Oblation" it is almost a necessity that it should support a crucifix, in order to call to the minds of the faithful a remembrance of the crucifixion of the Redeemer, the reason for the existence of the altar. The rules governing altar-crosses can be reduced to two.

I. An altar-cross should be made of such a material, size, color and style as will best harmonize with the altar.

II. It must be placed, midway, on the *re-table*; or it may form a part of the *reredos*, provided it is distinct enough to satisfy the rubric of the Missal; or where there is a *fixed-tabernacle* it may stand on the same, but cannot form a part or be fastened to it—in all cases the cross must be movable.

Just as the Jewish temple had special lights, such as the seven-branched candlesticks and the golden candlesticks that Solomon made for the "House of Lord," so has the Christian church its lamps and candlesticks, some of which are kept burning all the time and some only on certain occasions, among others at the Eucharist service. This use of lights at the celebration of the sacred mysteries of the New Law did not originate from utilitarian motives, any more than in the ceremonial worship of the Old Law, but from their value as symbolic signs and as marks of honor, or as S. Jerome observes (A. D., 376): *Throughout all the church of the East, whenever the Gospel is to be recited, they bring forth lights, though it be noon-day, not certainly to drive away darkness, but to manifest some sign of joy, that under the type of corporal light may be indicated that light of which we read in the Psalms—thy word is a lamp to my feet and a light to my paths.*



ALTAR-CROSS AND CANDLESTICKS. ITALIAN, SEVENTEENTH CENTURY

We learn from the verses of Paulines of Nola (A. D., 431) that lights were used in the Western Church in connection with the altar, not only at night but also in the daytime:

"With crowded lamp are these bright altars crowned,

And *waxen tapers* shedding perfume 'round,
From fragrant wicks beam calm a scented ray
To gladden night and joy e'en radiant day.
Meridian splendors thus light up the night,
And day itself, illumined with sacred light,
Wears a new glory, borrowed from those rays
That stream from countless lamps in never-ending blaze."

In further testimony of the universality of this custom of employing lights on or near the altar at the divine service the rubrics of all the liturgies, occidental and oriental, might be cited, as they directed and prescribe that wax-tapers must be lighted at the altar at which the holy sacrifice is offered.

The present custom requires that candles should be lighted from the beginning to the end of the service, hence every altar must be provided with at least two candlesticks and a high-altar with six, which are invariably placed on the step or steps of the *re-table*.

I. A properly constructed altar-candlestick is made up of four distinct parts, viz., the foot, the stem, the cup, and the socket or pricket; the foot must never carry more than one stem, but the stem may be divided by one or more knobs; the cup should be large enough to receive the dropping of wax from the burning candles, and for practical use sockets are preferable to prickets.

II. According to the ceremonial, the candlesticks are required to be of unequal heights, the lowest are placed farthest from the altar-cross and longest the nearest, but this rule is more often broken than observed.

III. The style of the candlesticks varies with the altar to which it belongs, but its color is determined by the different seasons of the year or the services of the day; gold is reserved for the ordinary and great

feasts, silver for times of penance, funeral services and anniversaries.

IV. Candlesticks may be made of wood, iron, brass, silver, gold and marble, or combination of the same.

V. Brackets issuing from the steps of the *re-table* cannot take the place of the candlesticks.

Altars on solemn occasions, when the Sacrament is not publicly exposed upon them, are sometimes adorned with reliquaries, usually four in number, which are always placed between the canonical candlesticks, two on a side, but never on or before the *tabernacle*. The use of relics in connection with altars has already been considered in the first part of this monograph, and all that need be said here is that the reliquaries should be rich and in keeping with the altar.

The employment of flowers in the ornamentation of church and altars is coeval with the first ages of the Faith, and is often alluded to by the early Christian writers, among others S. Augustin in his *City of God*; S. Paulinus, in his poem on S. Felix, and Fortunatus tells us in very beautiful Latin lines that both Queen Radegund and her friend, the Abbess Agnes, at Easter-time adorned Christ's altars with garlands of roses.

So spontaneous, innocent and expressive is this custom that it has at last become one of the laws of the church, consequently vases have to be provided in which to place the flowers, and as they may add or take away from the beauty or dignity of the altar, they should either be selected or designed by the architect with a view to their decorative effect. They may be made of wood, metal, glass, earthenware, or what you will, but should in no way suggest domestic vessels. Their place is upon the *re-table* between the candlesticks, or on the step below, or both, but never on the *mensa*.

No doubt there is much more to be said about Christian altars and their accessories than appears in this paper, but it is the belief of the author that all the important points that can be of any possible value to the architect have been introduced. However, it is hoped

that this monograph will act as a of THE ARCHITECTURAL RECORD to a stimulant and lead some of the readers further study of the subject.

Caryl Coleman.



A Mediæval Altar Reliquary.



NOTRE DAME DES DOMS, CATHEDRAL OF AVIGNON.



The Papal Palace and the Cathedral, Avignon, in the Fourteenth Century.

FRENCH CATHEDRALS.

Part V.*

THE CATHEDRALS OF PROVENCE.

A SURVEY of mediæval architecture as a whole in France shows two great architectural impulses. The earlier came from the south, and followed the path of Roman culture to the north. The later, and more developed, richer and more interesting, originated in the north, and is the true French art of the Ile de France, which gradually spread over the whole country, and, in truth, all over Europe, and was only prevented from absolutely dominating the entire French area by its own decay and the revival of the Renaissance; which, in its turn, came up from the south like the earlier movement. Provence is the most Roman portion of France, and it is there we find the earliest steps in that architectural evolution that later on culminated in the great cathedrals of the north. Chronologically, therefore, Provence must be the starting point for all historical studies in French architecture. Not that the earliest and crudest churches are to be found within it, not that its Christian monuments are the oldest we know in France, but here the connection with the older Roman art is most clearly seen, and

here also, as we shall presently see, a type of church was developed that, while not in structure as primitive as some other early and authentically dated monuments, illustrates a form and a system very much earlier in idea than many contemporary structures in the north.

The student and the traveler, fresh from the magnificence of Amiens, of Reims, of Paris, of Tours, of Chartres, can scarcely fail to be disappointed in the little cathedrals of Provence. But that is only because the standard of the thirteenth century is arbitrarily applied to the eleventh and twelfth. As a matter of fact, while the Provençal cathedrals have none of the splendid architecture of the north, while they have not the size, the glass, the carving, the decoration, the splendor of the great cathedrals, they are of special value in preserving a very early type of church, and in illustrating, in a very full manner, albeit often hidden by later rebuildings and restorations, some noteworthy stages in the evolution of church architecture.

The traveler among the cathedrals of Provence will enjoy many varied

* For introductory and historical papers see THE ARCHITECTURAL RECORD, Vol. II. Nos. 2 and 3; Vol. III., Nos. 1 and 4.

experiences. At Avignon, Arles and Marseilles he will find all the luxuries of modern civilization provided for him in a delightful way. Vaison, Forcalquier, Sisteron, Vence and Fréjus will offer almost nothing at all that represents comfort, and Senez is almost uninhabitable to the foreigner. The trains are slow, or possessed of a habit of running at inconvenient hours. The public stages are often crowded to suffocation within and to upsetting point without, and the private carriages, if one wishes such luxuries, are of an amazingly antique pattern. Except in the winter resorts of the Riviera and in the large cities, creature comforts and the pleasure of travelers are not co-existent. But these are the last things the genuine traveler will concern himself with. The people are delightful and interesting, of a rare honesty and simplicity that compensates, to a considerable degree, for the inconveniences of Provençal travel. The cities are close together, and a short ride on the railroad suffices, as a rule, to carry one to a fresh place for investigation.

The succession of cities, as one rapidly reviews them, is a picture of surprising variety, though of variable architectural interest. Many of them, as Vaison, Avignon, Sisteron, Digne, Vence, Nice and Antibes, have natural situations of the greatest beauty, though the mountain cities are less known than the sea-coast resorts. But of the scenery, the locality, the many ancient remains, the distinguishing characteristics of the cities and their inhabitants, I shall not have space to speak. As one moves from one cathedral to another all these things will be jotted down in notebooks and perpetuated in photographs and sketches. But though our present business is with the cathedrals only, it is well to briefly hint at their environment at the outset, and not let the surroundings wholly escape us in our studies.

Broadly speaking, the cathedrals of Provence are small and not altogether interesting structures. Dating chiefly from the eleventh and twelfth centuries they illustrate an economical type of

building admirably in keeping with the small size of the bishoprics and the limited funds commanded by their builders. And they typify a relatively early form of church, and continued to do so when more splendid monuments were being raised in the north in a new and different style. Singularly enough, almost a single type runs through the cathedrals of Provence, a type so frequently repeated as to give an excellent idea of the nature of Provençal architecture, without obliging us to draw on the rich remains of churches, chapels and abbeys.

I have said type; it would be more accurate, perhaps, to speak of two types, since churches with and without aisles are found. The latter are more numerous, and the former, though more elaborate in plan than the single naved churches, reproduce the characteristics of the smaller edifices. Economy in building is shown in several ways. The plans are simple, rectangular halls, with plain, small, shallow buttresses to strengthen the walls. The vaults are pointed tunnel vaults, the simplest and easiest to build, strengthened by unornamented arches. The internal piers have the same character, often with no more than a string for a capital, though sometimes the top of the pier is cut off and an ornamental short column inserted. The windows are small, the apse is not large, and is low, with a short preliminary straight bay between it and the nave. In the typical plan the bay immediately preceding the apse is covered with an octagonal dome, whose development and treatment we shall see in many churches. Ornamental detail is altogether wanting, or is copied, often with considerable faithfulness, from the abundant Roman remains to which the Provençal artist naturally went for his models for decoration.

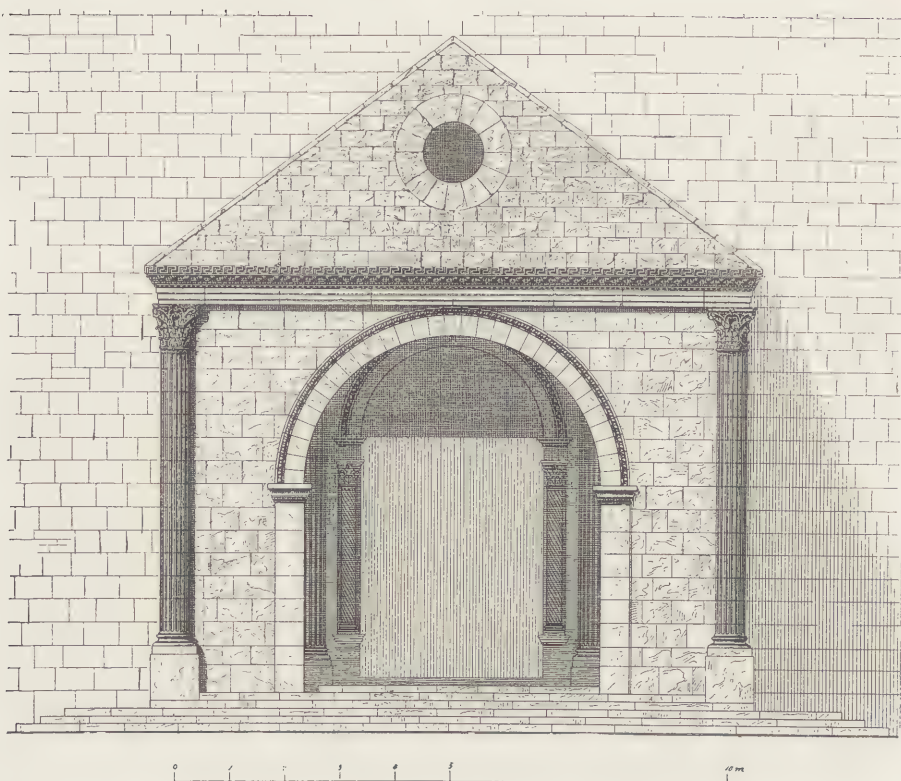
That this use of Roman detail came from the study of the adjacent monuments; that it was the survival of a traditional form of building; and that it was imported from the East on the return of the Crusaders, has been vigorously defended by as many different schools. To support the first claim we have the great

number of Roman monuments in Provence, which include some of the best preserved in the Roman world. For the second we have the strange contradiction that in at least two of the cities rich in Roman remains, namely, Orange and Fréjus, there is almost no use whatever of the models of antiquity. The cathedral of Fréjus does, indeed, recall the basilican plan, as does the cathedral of Orange, but apart from this there is no hint of Roman origin in their structure or their detail. To support the claims of the third school we have the similarity in detail between certain Syrian monuments and those of Provence, together with the introduction of certain Greek motifs that betray a Byzantine influence. Doubtless it is to Byzantine influence rather than to Syrian that we are to look for the origin of these similarities. The development of Provençal Romanesque is probably due to a combination of the three causes that have been put forth as its single source of inspiration, though there appears little enough reason to look for its origin in an importation from Syria.

In noticing the Byzantine elements in this architecture the dome has generally been singled out as the most important. Yet the dome of the Provençal churches in no way recalls the system of Byzantium. The domed churches of the East are wholly different in plan and in structure from those of Provence. In the East the typical plan is a square with a central dome, sometimes alone, sometimes in junction with other domes. No Provençal church offers a parallel plan, the uniform system being a hall with a pointed tunnel vault and a dome over the bay before the apse. Even the structure of the small pendentives on which the domes are carried is peculiar to Provence, though the idea is found in the East, but treated differently. It would seem, therefore, a too hasty generalization to consider the Provençal dome a direct importation from Byzantium. That it was Byzantine in its origin cannot be doubted, but before it reached Provence it underwent so many modifications as to appear as a new and almost original feature.

Though ornamental detail is little used in these churches as a whole, Provence produced one great work of abounding richness and magnificence in the portal of the cathedral of S. Trophime at Arles. It is the culmination of the Post-Roman art in Europe, and is a work not only of wonderful richness in detail, of exquisite delicacy of workmanship, and of great power in design, but it is one of the most splendid products of the middle ages. There is no sign of half-understood copying, of blundering reproduction, of half-hearted use of misunderstood forms; it is a work alert with intense feeling and thorough technical mastery, together with an ability to design, and a fine conception of the value of detail and of sculpture, that is unique in Romanesque art. The same abundant detail, as well done and as wisely used, may be seen in the two older walks of the cloister of this cathedral, which thus presents a richness of effect that Provençal art offers in no other structure. Yet this detail in S. Trophime is not typical; it is the finish and the end of an art of which, in other churches, we have scarce more than a hint.

The date of the Provençal cathedrals is a complicated and difficult question. There are no early written records, and in several instances there are no late records. Many cathedrals have been so restored and added to and changed in their later history that their primitive form is almost hidden, and their interest as monuments well nigh destroyed. Though a few monographs exist on particular cathedrals they have never been studied as a group. The most extended study of Provençal architecture is, of course, M. Révoil's monumental *Architecture romane du Midi de la France*. This learned and enthusiastic architect bases his argument for dates, in the absence of other record, upon the letters and masons' marks on the stones of the churches, and generally arrives at a time much too early to satisfy other scholars. It is not, in fact, safe to refer any Provençal cathedral to a date earlier than the year 1,000, though the tradition that Charlemagne was a benefactor of



PORCH — CATHEDRAL OF AVIGNON (RESTORED).

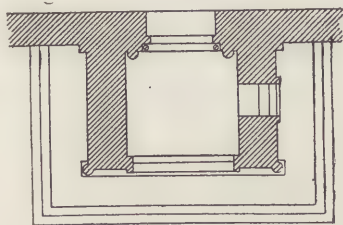
many of them, has been gravely applied to the present structures by not a few historians, to the confusion of orderly thought, and in direct contrariness to visual evidence. Obviously it is impossible to seek for actual and verified dates where the records are so meagre; at the best, therefore, it is only possible to refer the churches to well-defined groups that follow each other in approximate historical sequence.

The earliest is formed of those churches whose detail most closely approximates the antique, good types of which are seen in the south aisle entrance of the cathedral of Aix, and in the west porch of the cathedral of Avignon. The capitals have a very close resemblance to the Roman Corinthian, and early writers did not hesitate to class them as ancient monuments. After them comes a later group in

which the detail, while still of Roman character, has lost its peculiarly Roman aspect. Heads and grotesques appear among the acanthus leaves of the capitals, and the ornamented freizes are no longer exclusively decorated with Roman ornament. Examples may be seen in the apse of the cathedral of Cavaillon and in the remains of the cathedral of S. Pierre in Carpentras. In both groups the general plan and structure are the same, and are identical with the single naved churches described above.

In the next group many changes are apparent. The exterior central towers or lanterns of the cathedrals of Avignon, Cavaillon and Carpentras have detail decidedly Romanesque, with scarce a hint of Roman origin, save at Avignon. And this new phase now characterizes all Provençal churches. So long as only the old way

of making capitals and ornament had been known, so long was it kept up; but once a new style was devised, the old was neglected—until revived in a different way in the Renaissance. In the final group, represented by the cathedrals of Digne and Senez, the Roman ornament gives way utterly



Plan of porch — Avignon Cathedral.

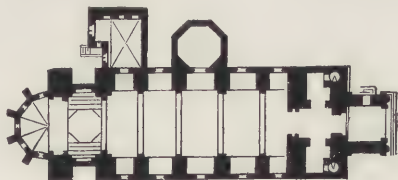
to Romanesque. But structural changes now appear, the most important being that the central portion of the two parts composing the pier that carries the vault arch becomes an engaged half column. The antique aspect has gone; a new style of architecture has arisen, though it still retains many of the materials of the old.

II.

Compared with the huge mass of the Papal palace that immediately adjoins it, the metropolitan church of Notre Dame des Doms at Avignon is small and unimportant.* Yet few churches in all the world have had so brilliant a history; have been the object of a wider devotion and veneration or become more famous. Its origin dates back to the beginnings of Christianity in Provence, an oratory on its site having been built, so it is said, by S. Martha, who afterwards slew the Tarasque at Tarascon. Whatever may have been the early vicissitudes of the church, it is at least certain that it was destroyed in the two sieges to which the city was subjected by the Saracens in the eighth century. That it was rebuilt by Charlemagne, or received gifts from him, is probable enough, but there is not the slightest reason for attributing any portion of the present structure to his time. The legend connected with this rebuilding is a marvellous

one, for it is recorded that after the cathedral had been finished by the pious emperor, it was consecrated at night by Jesus Christ Himself, who descended from Heaven for that purpose and was assisted in the ceremonies by angels. Luckily a pious woman who made a habit of repairing to the church at one o'clock every morning was an hour earlier that night, and was able to communicate full details of this miraculous event to her fellow townsmen. An inscription placed in the porch of the cathedral in 1686 records its rebuilding by Charlemagne and its miraculous dedication, and learned and grave historians have cited it as evidence of the truth of these tales!

Like that of all early churches in the south of France, the date of the cathedral of Avignon has been the subject of much dispute and of very great uncertainty. A few years ago, however, M. Deloye brought to light a Martyrology of the eleventh century, in which the dedication is stated to have taken place in the year 1069. The event is recorded in pictorial and flowery language, the construction of the new church being compared to the creation of Eve, which, as M. Deloye shrewdly points out, is very good ground for assuming it to have taken place after a complete rebuilding, and not at the completion of some repairs. Some years previously another French scholar published an act from the archives, undated, but certainly prior to 1118, in which the canons of the



Cathedral Avignon.

cathedral complained to the monks of the neighboring abbey of S. Ruf because they did not send them, as formerly, skilled workmen to labor at the construction of the church. There is no conflict between the two records, since the latter may refer to some repairs, while the former certainly suggests completion.

* View of the interior of the cathedral of Avignon was published in the ARCHITECTURAL RECORD, Vol. II., p. 313.



SECTION THROUGH DOME—CATHEDRAL OF AVIGNON.

The fabric of the cathedral has received so many additions since the little hall church of the eleventh century was built, and its interior has been so much changed, that it is difficult for the visitor to recall its primitive aspect. But it is clear enough that it was a simple nave of five bays, with the usual characteristics of the Provençal Romanesque of that date. That is to say, it has a pointed tunnel vault with double vault arches, resting on plain piers. The outer pair of each group of piers is cut away towards the top, and a small decorated column, channelled, fluted, or twisted, inserted. At the base of the vault is a small decorated cornice. On the walls each bay has a double round wall arch, the outer of which has a small edge or hood mould over it. All of these elements are repeated again and again in Provençal churches, though not always with the same elegance of detail and ornamental richness. The primitive construction is still clearly visible, though in the later decorations the lower parts of the piers have been cut away and their structural significance injured.

Beyond the fifth bay is the dome, which is included in the choir. This is thoroughly Provençal, though the structure is more elaborate than we shall find elsewhere, and, in truth, will be met with only in the ancient cathedral of La Major at Marseilles. The nave bays are narrow oblongs, and in order to obtain a square within which to inscribe the octagonal dome, a series of round arches have been corbelled out on the inner faces of the west and east arches of the choir bay. In the corners of the square thus formed are small, round arches forming a sort of pendentive to make the octagon. The lantern is lighted by round topped windows, with columns between them at each angle, carrying plain arches turned over the windows; it is covered with a low, semi-spherical dome without ribs. The apse was rebuilt in its present ungainly form in 1671, at which time the length of the church was slightly increased.

The most notable external parts belonging to the epoch of the nave are the west porch and the lantern. Most

of the side walls, where they have not been encumbered with chapels, have been restored, and the cloister and chapter house, the former containing the primitive chapel said to have been built by S. Martha, were swept away in the Revolution. Some interesting fragments of the cloister may be seen in the Musée of the city, and elsewhere; the fine private collection of M. Garcin of Apt contains some of the capitals.

The west porch is one of the most interesting monuments in Provence. Its detail is almost classic, and it was long regarded as a Roman structure, and attributed to the Emperor Constantine. It is a small rectangle, somewhat broader than deep. On each of the two outer angles is an engaged channelled column on a low pedestal, with capitals that are close copies of the Corinthian. They carry a shortened entablature, with a richly carved crowning member. In the centre of the plain pointed pediment is a small, round opening, with a hollowed frame, that is the forerunner of the circular west window which subsequently received such splendid development in the hands of the Gothic architects of the north. Below the entablature is a round arch with an egg-and-dart ornament under its outer edge, and resting on plain pilasters, with slightly different capitals. The side walls of the porch have a small buttress against each end. Of the arches that once opened in each side that on the south alone remains.

Within is a round tunnel vault, partly restored. The inner portal reproduces the essential details of the external porch. Channelled half columns in each corner, whose capitals, as in the cathedral of Aix, are surmounted by a block with a carved cornice, continued across the wall, carry a triangular pediment with double carved mouldings with modillions. Below its fragmentary entablature is the round arch of the doorway, with an egg-and-dart ornament as on the outer arch, and resting on twisted fluted columns, with fragmentary entablatures represented by a block moulded on its upper face. The similarity between this

portal and that at Aix is striking, but it is more elaborate, and the capitals follow the Corinthian models more closely. On the tympanum is a fresco by Simon Memmi of Our Lord between two groups of angels. The exterior wall of the cathedral above the porch is featureless, save for a large buttress on each side. The tower fell down in 1405, from the effects of an earthquake, and was rebuilt in 1431. Some fragments of columns above the porch belong to the original structure, and are the remains of a small colonnade once carried across its base. A similar colonnade surmounts the southern portal of the church of S. Martha at Tarascon, where, however, it is well preserved.

The exterior of the lantern is the expression of the interior. On each angle is a channelled column, whose capital, which supports nothing, is a much modified form of the Ionic. Above is a series of modillions on which is the single-fretted band of the cornice. The small windows are enclosed in a plain round arch on short channelled columns, with capitals of the Corinthian motif. The cupola is now roofed with a low-stepped pyramid.

With the transfer of the papal court to Avignon in 1305 a new lease of life might be expected in the little cathedral. The popes have always been energetic builders, and their sojourn in Avignon was no exception to their activity. They built the mighty papal palace; they surrounded the city with ramparts; they endowed churches and encouraged the erection of monasteries; until the city was thronged with structures built under their direction or at their instigation. Yet with all these tremendous undertakings, which to-day make Avignon one of the most interesting and picturesque cities in France, there was little done to the cathedral of Notre Dame des Doms save the addition of some small chapels. The largest, formerly known as La Annonciation, and now part of the chapel of Notre Dame de Tout Pouvoir, a sort of north nave to the cathedral, was built in 1506. The energies of the popes were expended more in the building of their magnificent palace

than in adding to their cathedral, though it must always be a matter of surprise that so small a church should, for the seventy years of papal residence, have served as the premier church of Christendom. Yet, though the popes scarcely added to the architecture of the cathedral, they left their marks in their monuments within it. The splendid Gothic tomb of John XXII. stood for centuries in the nave parallel to the high altar. Removed in 1759 it finally, after desecration in the Revolution, was rebuilt in a greatly injured state in the chapel adjoining the Sacristy. The tomb of Benedict XII., of similar style, has, since 1839, occupied part of the wall space of the chapel of La Annonciation.

This ancient chapel opens from the second and third bays of the nave on the north, and is connected with the chapel from the fourth bay, now consecrated to Notre Dame de Tout Pouvoir, from a celebrated and venerated image over the high altar, the two together forming a single enclosure which is the largest appendage to the cathedral. The pointed, ribbed vaulting of the two westerly bays rests on corbels, below which are twisted bands, part plain, part foliated. Two pointed windows in the west wall, and one in each bay in the north wall, admit the light. The chapel of Notre Dame, which directly communicates with these bays, was entirely restored in 1839-1840. It is separated from the older part by a high round Renaissance arch, on two twisted Romanesque columns on each side, standing on high pedestals. Beyond, its vaults divide it into three bays, the two westerly having round cross vaults, and the easterly one a round tunnel vault supported by columns carrying an entablature. The whole of this inner part is painted in fresco by Eugene D  veria, a native of the city.

The lower part of the nave has been subjected to so many changes that its original character is wholly gone. In 1671 Archbishop Azo Ariosto built the tribunes or the galleries that, beginning at one side of the choir, run continuously around the cathedral, across the

west end, to the other side of the choir. It spans the entrance by a low, deep coffered arch, supported by pilasters, with niches containing statues of S. Martha and S. Mary Magdalene with some considerably defaced frescoes beyond. This decoration was done at the expense of the city of Avignon, and while it is impossible to deny that it has destroyed the original aspect of the church, it is an extremely interesting work for its date. The gallery formed by it is shallow—scarcely broad enough to compensate in space for the expenditure lavished upon it—and is carried around the piers on heavily carved segmental bases. This enrichment is continued on the intervening spaces, and the whole is completed by a balustrade. To build this, much of the older structure was removed or changed. The main piers of the nave arches were cut away altogether, and do not now appear below the gallery. The longitudinal or wall arches were also altered, and only the outer section of the pier rises from the floor, amidst the columns and piers of the new work.

Below the tribunes each bay has a four-centered arch, rather deep, and moulded on the outer face, with a coat of arms in the centre. Within are the entrances to the chapels, which towards the nave are of the same general plan, with very flat, almost straight, deeply moulded arches, and with round fillets rising from the bases on the columns, and continued on the arches as mouldings. The arches in the second and third bays on the north side have, in addition, a twisted column with similar flutings, and doubtless intended for statues. They are repeated within the chapel at the third bay.

Both sides of the cathedral are lined with chapels, none of which formed part of the original plan. On the north side, in addition to the large chapel are two small ones on the west of the nave, one being of recent date. On the south side is a series of small chapels; first, a passage to the concierge's apartments, a recent rebuilding at the west of the cathedral; a small chapel of the fourteenth century, like the small ones on the opposite

sides;* a square chapel of the seventeenth century, with an elliptical lantern and dome; next, the chapel of La Résurrection, now dedicated to the Virgin, built in 1680 by Archbishop Hyacinthe Libelli; richly decorated with niches and pilasters and lighted by a lantern supporting a coffered dome, an effective design, notwithstanding its late date; the fourth chapel is like the first, and beyond it is the last chapel, an oblong apartment of three bays, formerly dedicated to S. Joseph, but now containing the tomb of Pope John XXII., and serving as an ante-room to the small Sacristy which is entered at its furthest extremity.

Of the later portions of the exterior the most interesting is the west tower, which is a prolongation of the facade wall. It is a large rectangular structure, rising two stories above the cathedral roof, so huge and massive in outline as to be quite disproportionate to the size of the church. Each face is divided in two vertically by thin channelled pilasters, repeated on the ends. Horizontally it has four divisions, of which the lowest and uppermost are solid pieces of wall, while the two middle stages are lighted by round arched windows placed close to the central pilasters. There is no decoration save a coat-of-arms inserted in the wall beyond the lower windows. The parapet which surmounted the tower was removed in 1839 for a balustrade, which, in its turn, was changed for the present one. In 1859 the tower was surmounted by a stepped pyramid, carrying a small octagon, on which is a colossal statue of the Virgin in gilded lead, which very effectively deprives the structure of its original character and beauty.

Standing directly over the chief entrance of the cathedral, the tower necessitates a dark and sombre entrance, which, while not beautiful at all in its decoration, is not uneffective, with the small and gloomy interior

*The names of chapels in the French cathedrals are so many, and they have been changed so frequently, that only those of architectural or historical importance will be given. It is much more convenient, and prevents confusion, to distinguish the chapels by numbers, counting from a given point, the main or entrance facade being the most convenient base line.

beyond. In the upper gallery over the entrance archway, the tower contains a large rectangular chamber opening onto the tribunes. It has deep arches on each side, with small pendentives of the usual Provençal type, with symbols of the Evangelists in their lower faces; the octagonal dome has flat ribs in the centre of each face.

The external side walls are entirely featureless, or reflect only the various periods of the chapels which, from time to time, have been added to the cathedral. Two of the clearstory buttresses on the south side, however, have two small flat round arches on them, a decoration we shall find on the buttresses of the Carpentras, and a similar ornament forms part of the nave cornice. The south side of the cathedral is so close to the papal palace that its structure is scarcely visible, while the open north side has been almost completely rebuilt.

If the cathedral of Avignon is somewhat mediocre in its external and internal aspects, if it fails to impress by the strength of its form or the beauty of its detail, if it is dwarfed by the statue that surmounts its tower, its deficiencies are in a measure, compensated for by the unquestioned splendor of its immediate surroundings. Its position is superb. On a high eminence, it stands well above the city. To the left the *Rocher des Doms* rises above it. To the right is the sumptuous palace of the popes, almost the most splendid mediæval castle in France, and one of the greatest and most interesting structures of its kind extant. The church is approached from below by a series of steps and reversed inclined planes that add much to the majesty of its situation. In the centre is a large platform, with a Calvary, placed in 1819; it occupies the site of a statue of Hercules, a relic of the pagan shrine that preceded the Christian church, and which stood here until a pious pope in the fourteenth century removed it for fear of its influence, even at that day, for evil. Below the level of the church and palace, and to the right, where it closes the great square, is the former palace of the archbishops, now the *Petit Séminaire*. And below all is the

swiftly flowing Rhône, with its ruined mediæval bridge, reaching out piteously to the opposite shore, which is crowned by the magnificent remains of *Ville-neuve*. Nowhere else in Europe, save at S. Peter's itself, can so imposing a group be seen, rich in ecclesiastical history and interest, and awakening many stirring memories. Yet the cathedral, which to us is the central point of the picture, is a small and almost unimportant church, though it contains the tombs of two popes, and of one hundred and fifty-seven cardinals and prelates.

Whether the cathedral of Avignon is actually the first of the series of Provençal churches which repeat the general character of its forms, is not, perhaps, a question of great moment. Doubtless it would be interesting enough to know which of them was actually the earliest, but the difference in years between this church and the cathedral of Aix cannot be great. It is more important to remember that its primitive form is of the type general in this part of France, and as such it has an architectural interest apart from the memories its later history has brought around it.

When the popes had completed their magnificent palace the aspect of the cathedral was somewhat different from what it is to-day. The fourteenth century was the epoch of Avignon's greatest splendor, though it cannot be said the cathedral reflected it in any way. It then had its original tower, whose form we can only guess at. A heavy wall connected it, on the front, with the papal palace, and on the other side a circular tower of the ramparts abutted directly against the cathedral. Below, lesser walls, in keeping with the military architecture of the castle, formed the approach. Considering the many changes to which the church has been subjected, it is somewhat notable that the façade is little altered, save in the tower, which doubtless followed the earlier model more or less closely. The chapels appear only on the sides, where they give a confused effect of unimportant walls without dignity or interest. In the seventeenth century, as we saw, the changes were chiefly

internal, in the decorations of the nave and in the rebuilding of the apse. The Revolution necessitated further restorations, which were not finished as late as 1822, and various alterations and repairs have been made since. On the whole the architectural history of this church is not creditable.

Barr Ferree



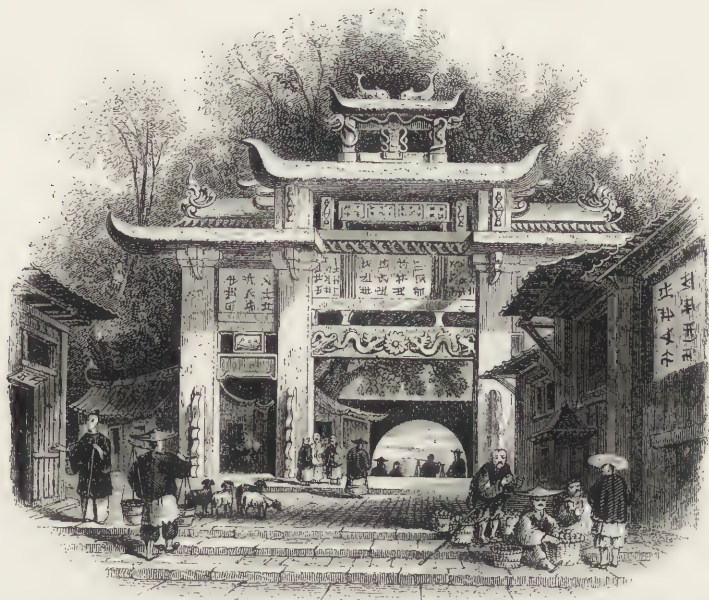


FIG. 3.—A PAI-LOO.

EASTERN ASIA ; OR, CHINA, COREA AND JAPAN.

INTRODUCTION.

CHINA, Corea and Japan form not only an art-group distinct from the rest of the world ; but also an art-sequence, for China taught Corea, and Corea Japan, with the result that in each case the pupil outstripped the master.

It must not be understood, however, that Corea and Japan are without native styles of their own. Corea has developed many native forms quite independently of her Mongolian neighbor ; and the Shinto Temple is as purely indigenous to Japan as the great Temples of the Theban period were to Egypt.

But the introduction of Buddhism successively into the Hermit Kingdom and Mikado's Empire brought with it a vast quantity of Chinese architectural material, which became more and more refined and idealized in its progress eastward, until it reached peri-helion in Japan ; where (it is not too much to say) the *real* climax

of Chinese architecture is to be found to-day.

From this slight explanation it will be readily seen, that properly to understand the architecture of Eastern Asia, we must first turn our attention to China.

CHINA.

Chinese builders are better engineers than architects, as is shown in the ramparts surrounding their cities, their bridges, and the Great Wall which contains sufficient material (it is said) to span the world twice with a bulwark six feet in height and two feet in thickness.

Indeed no nation understands the quarrying, cutting, and adjustment of granite more thoroughly than the Chinese, and in this respect they bear comparison with the Russians of to-day and the Egyptians of ancient time.

This facility is doubtless the result

of long, despotic, and vigorous training, for a legend relates that a mason employed upon the Great-Wall was put to death, because certain joints between the stones of his portion of the work were left wide enough to admit the insertion of a nail.

Notwithstanding this rough training, and the Chinese facility in handling stone, the majority of Mongolian buildings are of wood, on account of the well-founded fear of earthquakes, and after wood, brick, often overlaid with porcelain, is the most common material.

Such being the case, the perishable quality and brittleness of these substances has robbed China of those great historic monuments, by which one usually reads the tale of a nation's evolution, a condition further aggravated by the Emperor Tsin-Chi-Hoang-Ti who, in 246 B. C., wilfully ordered the destruction of all important buildings constructed before his ascent of the throne, and thus cut off all connection with the architectural past of the country, save that of tradition.

This, however, is fortunately stronger in China than in any other country on the globe, save Corea, and so rigid and unbending are the laws and rules of Celestial architecture, that to study the Chinese building art of to-day is to study that of all time.

The primitive type from which all houses of the "Flowery Kingdom" must have sprung was the *tent*.

Concerning the derivation of Chinese buildings from this architectural amœba, Mr. Hope says: "In the wooden pillars, destitute of marked bases and capitals, which support the ceilings in such numbers, we see the poles; in the roofs which, from these pillars project so far, convex alike in their spine, their sides and ribs, the awning of hides or pliant stuffs, spread over ropes and bamboos; in the curling spikes that fringe their eaves, the hooks and fastenings; in the lowness and spread, and clustering of the different parts, the whole form and appearance and character belonging to the residences of the herdsmen, their ancestors."

The palaces likewise resemble an agglomeration of wooden tents, while the pagodas are simply a series of the latter piled one upon the other.

Religion has helped to mould architecture to a certain extent in the "Middle Kingdom." The beliefs most generally accepted are Buddhism, Confucianism, and that of the followers of Laou-Tse or Tauism (from Tao, Supreme Wisdom). Of these religions or Philosophies, Buddhism has most affected the building art of the country, by introducing pagodas, the finest architectural objects of the land.

Christianity also exists to a certain extent, there being about 400,000 Roman Catholics and 4,000 Protestants in the realm; but these have not influenced the native architecture, since their churches are but a simple imitation of our own houses of worship, save that the stained-glass windows usually represent the Saviour dressed in Chinese costume and wearing a pig-tail.

For the average Chinaman can never bring himself to worship one whose image recalls a *foreign devil*, a complimentary epithet which he applies to all Europeans and Americans indiscriminately.

DOMESTIC ARCHITECTURE AND PALACES.

The domestic dwellings of "Ta-Tsing-Kwo," or the "empire of great purity," as the present reigning family love to call their land, are externally dingy in the extreme; but the interior walls and courtyards are much gayer, being illumined by brightly colored tiles and painted and gilded wood; while the inner portions of the houses of the wealthy are often encrusted with ivory, copper and mother-of-pearl.

This kind of elegance, however, is confined to the houses of the Mandarins and rich retired pawn-brokers, and is rather the exception than the rule; but all Chinese houses share alike in simplicity of construction and certain other features, which may be enumerated as follows: Shops and dwellings are seldom over one or two stories in height, extent being considered of more importance than height, and even palaces resemble a number of low

sheds with ornate roofs grouped about a courtyard which is adorned with rock-work, trailing vines and fantastic fountains.

The roof is always sustained by wooden or granite posts, which rest in turn on brick foundations, and are strengthened by transverse beams. The space between these beams and the roof is usually filled with a frieze of open work carving. All the frame work and roofing are completed before the sides of the building are filled-in with masonry, or, as is often the case in Manchuria and the North, with mud.

Glass having only recently been introduced into China, and being almost unknown in the South, windows do not play the same important part as in our own exteriors. Their duty is performed by window-doors, two to three feet wide, glazed with oiled paper and extending from the ground to the roof in one-story dwellings, or the height of each story in buildings of greater pretension. These buildings are likewise provided with verandahs or loggias of the kind familiar to every traveler who drives along the Nanking road toward the "Bubbling Well" in Shanghai.

The most imposing features of every Chinese house are the door-way and roof.

The doorway is chiefly noticeable for its brilliant tinctures of illumination and elaborate carving of dragons or other monstrosities upon lintel and jamb; but to its roofs the architecture of the "Middle Kingdom" owes almost its entire claim to beauty. Nearly all roofs are composed of tile, are hipped and concave in shape, and bent up at the corners in the manner peculiar to Eastern Asia. Sometimes this folding up of the edge appears in the middle of the side as well, giving an impression of festooned eaves.

Chimneys being a rarity and practically unknown in the South, the roof depends for its ornamental decoration on the treatment of the ridge and ribs, which are, therefore, elaborately carved to an extent uncouth to the Western eye; but on the whole Chinese roofs are pleasing, and do much to relieve monotony in the landscape, which along the entire coast is extremely flat.

The framing is formed of two or more tie-beams above one another, each supporting the ends of a pair of purlines or longitudinal timbers resting on vertical joists, which rest in turn on a bracket or the tie-beam below (fig. 1).

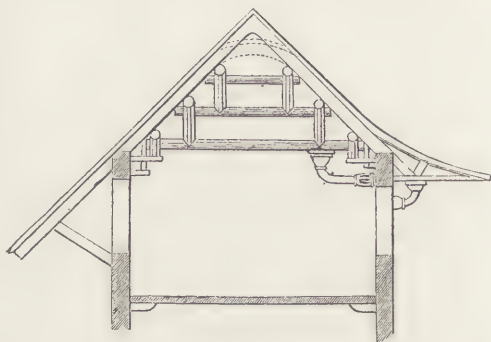


Fig. 1.

No attempt is ever made to crown the posts with capitals, and the other beams are rarely squared or carved, but are left round.

This latter treatment appears, at first sight, primitive to the average foreigner; but the real reason for it is that the trunk of the pine tree (the Chinese symbol of rest, and found in all parts of the country), is the material invariably used; and though the outer rims of wood in this tree are extremely hard, the centre is soft and spongy in consistency, so that to square or carve a tree of the kind presents the same difficulty as carving a wooden cylinder.

Most Northern Chinese houses are heated by means of a "Kang" or bench of stone masonry, beneath which is a tortuous flue from the kitchen fireplace. On this warm bench the family sits by day and sleeps at night, thus making one fire supply heat for the whole household and economizing fuel.

In Southern China braziers are popularly used for cooking, and are sometimes employed instead of a "kang" in the North during the summer months.

Such are the principal features of domestic dwellings in the Celestial Empire, while the palaces, as hinted above, are simply a collection of such buildings interspersed with gateways

and courtyards and adorned with mazy labyrinths of rock-work.

Even the "Great Unseen," the Emperor of China, and "Heaven's viceroy here below," before whose very clothes and furniture the Mandarins prostrate themselves as before something holy, even *he* dwells in a collection of sheds of this kind, with little to distinguish it, save area and extent, from a number of the dwellings of the poor.

How great a boon this large extent of space and breathing room is, can be appreciated only by those who have lived in the filth and squalor of a Chinese city like Canton, Shanghai, or Peking, where the majority of streets never exceed seven feet in width, and where a reeking, seething mass of humanity, infested with noisome vermin, herd together in ill-smelling kraals, and drag out lives of dull torture, relieved only by occasional drunkenness on opium.

PAGODAS.

The most characteristic features of every Chinese landscape are the pagodas, so called from the Hindustanee word "Poutkhoda," meaning the "house of idols" or the "abode of God." These buildings are for the most part Buddhist. But they are by no means *confined* to that mode of worship. At Canton there is one attached to a Mahometan Mosque, and others perform various duties for other creeds.

Superstitious natives believe that pagodas exert a fertilizing influence upon the surrounding soil, and affect the fall of rain in the country round about, as far as the eye can discern their pointed tops. Hence tall pagodas are in great requisition.

These minarets of old Cathay came originally from India and Burmah with the Buddhist cult; but in them one sees little to-day to recall Tanjore or Shoemadoo. They consist of octagonal tower-like structures, from three to nine stories in height, tapering toward the top and terminating in a point. Each story is provided with a verandah, and each verandah with a tiled roof.

A spiral staircase winds up the centre, supported at the outer extremities by a cylindrical wall of masonry extending from top to bottom. Through this wall a door is cut at each story, opening upon a passageway between it and the outer octagonal wall, and each facet of this outer wall is likewise provided with its own entrance from the verandah.

Red is the prevailing color of all religious buildings in China and hence of the pagodas. This use of red as a religious color was doubtless derived from India where to this day they sprinkle their clothes with vermilion powder or paint at certain religious festivals.



Fig. 2.—Po celain Tower, Nanking.

In some cases the materials composing pagodas, are of such richness that paint is almost entirely dispensed with. A good example of this was the porcelain tower of Nanking (Fig. 2), erected between 1412 and 1431, as a token of gratitude to an empress of the Ming dynasty, but

destroyed during the Taiping rebellion.

This pagoda is said to have been the finest ever erected in China; it rose 236 feet in height, was divided into nine stories, and was covered entirely with porcelain. From each angle of the several roofs depended a bell, while chains festooned from the spire and embellished in like manner, made a chime of twelve dozen in all, which tinkled pleasantly in the soft breezes which always spring up after sunset in those latitudes.

Another example is the pagoda of Chinkiang on the Yang-tse River, which once stood as the boundary between the two great divisions of China under the Tang dynasty, 618-923 A. D., and which is composed of finely-wrought iron embossed with metallic sculpture.

Besides octagonal pagodas there are some few square in shape, as the one at Tsing-Poo; but these are mainly interesting from the fact that they probably furnished the pattern from which the Koreans and Japanese modelled their minarets.

PAI-LOOS AND PAI-FONGS.

After pagodas the most purely national architectural objects in China are the Pai-loos.

They consist of four uprights with one or more horizontal beams mortised into them, and surmounted by a tiled roof, thus forming a species of triumphal arch. (Fig. 3, page 288.)

Foreigners have been criticised for calling pai-loos "triumphal arches," since they are used for the most part as memorials to statesmen, public benefactors, or other persons of distinction. Nevertheless, Pai-loos are sometimes employed to record a military triumph (as the one erected in Canton, commemorating the great defeat of the English by the Chinese), and as they usually span a public road, and have the central aperture larger than those at the sides, they certainly fulfil all the conditions of triumphal arches.

Most pai-loos are made of granite, though marble is used in the North, and all are elaborately carved and

adorned with tablets setting forth their "raison d'être" in the decorative Chinese characters. An exquisite specimen, profuse in decoration, stands before the Buddhist Monastery at Peking. Another, less elegant in design but bolder in execution, spans the highway at Amoy. (Fig. 4.)

The roof tiles are emblazoned with almost every color save yellow; which is the imperial shade, its use on the house of a private citizen or any other than the Emperor's being a capital offense.

Indeed there is a species of censorship or architectural police over all buildings, who regulate the size and appointments of buildings, according as the owner is of high or low estate, a royalty or prince of the first, second or third degree, a mandarin, grandee, citizen or coolie.

Pai-fongs are pai-loos dedicated to women of noble character, or to show respect to the memory of one's mother. They are also erected to widows who have not married a second time, or virgins who have died without entering the matrimonial state.

Pai-fongs differ from pai-loos, in having only two uprights instead of four, and so forming one arch instead of three. They are also less elaborately adorned.

Both Pai-loos and pai-fongs are probably evolutions of the Tarter "Red-Arrow-Gates," which are to be found in their most primitive form in Corea, though some effort has been made to trace them to Indo-China, and so back to India.

TEMPLES AND TOMBS.

The temples of China, whether Buddhist, Tauist or Confucian, differ little from the palaces and private dwellings of the rich. Like them they consist of square or oblong enclosures containing the houses of priests, in the midst of which rises the main hall of worship or temple proper, containing images and precious relics, and much adorned with vermilion, the color of religion as before mentioned.

These sanctuaries for the most part betray little originality or magnificence;

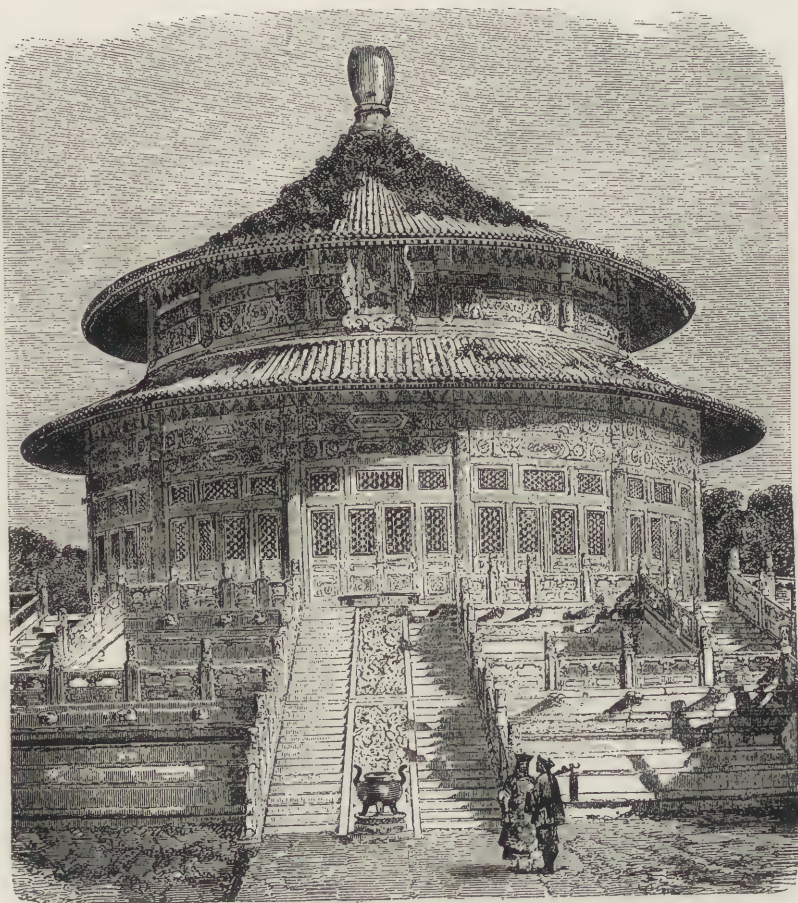


FIG. 4.—TEMPLE OF HEAVEN, PEKIN.

but there are some notable exceptions to the rule, as the Wan-Sheu-Shan, near the Pekin Summer Palace, which is composed almost entirely of colored majolica, and loaded with Buddhist sculpture; while another near it is cast in bronze of exquisite workmanship.

A labyrinthine rockery adorns the temple gardens like those of Mandarin clubs and palaces; but otherwise little effort is made toward landscape gardening or otherwise providing a suitable setting, as in Japan.

In addition to the orthodox religious temples, there is another species known as *Imperial Temples*, where the Emperor officiates in his role of high pontiff. Their services are neither Buddhist, Confucian nor Taoist, and are not

held oftener than twice a year. There is also more spirituality in their ritual than appears in those of the other three faiths or philosophies, since prayer and sacrifice are offered to the thoughts and ideals expressed upon printed tablets hanging round about, instead of to images, lest the worship degenerate into material idolatry.

The Shang-ti or tablet to the *Supreme Lord*, and the tablets dedicated to the deceased emperors, are among the most popular; and to these the Lord of Cathay offers incense and fire.

Of all *Imperial temples* the one known as the *Temple of Heaven* (Fig. 4) has acquired the greatest modern repute. Though recently burned, its ruins may

still be seen near Peking enclosed in a beautiful garden four miles in circumference.

Unlike other Chinese temples, it is composed of only two buildings, called the *South Altar* and the *North Altar*.

The former rests upon three circular terraces (each six feet high), which are ascended by four flights of stairs corresponding to the four cardinal points. It is hypæthral, or left open to the sky, for purposes of sacrifice.

The *North Altar*, as though to make up for the lack of covering in its neighbor, has two roofs, one above the other, encrusted with tiles of ultramarine blue. Its shape is circular, and (before the fire) the walls were fretted with eccentric carvings, and the windows webbed with

walls of granite or marble, set upon terraces, approached by flights of steps, and pierced with a door leading into a vault. The vault is underground as a rule, for the entire affair is usually cut into the slope of a hill; but when this is not the case and the tomb is reared upon the plain, the whole conception becomes illogical, and an otherwise dignified architectural object appears awkward and insignificant.

The tombs of the Ming Emperors are preceded by temples, altars, triumphal arches, and long avenues flanked by statues of men and animals; but the last resting places of the lower orders of society, both around Peking and elsewhere, can scarcely be classed as architectural objects, consisting of huge

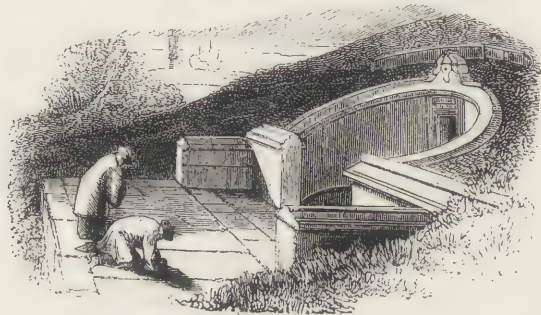


FIG. 5.—CHINESE SEPULCHRE.

lattice-work. Terraces and imposing stair-ways afforded opportunities for the processions, dancing and music which accompanied the ceremonies, and the whole building rose 99 feet into the air, a stupendous height in China.

Within, there was little save the altar to Shang-ti, and a certain reckless use of red pigments; but the general effect was brilliant in the extreme.

TOMBS.

We have now touched upon all the various kinds of buildings in Cathay, except the Chinaman's last habitation, and in this he shows himself both more and less architectural than in almost any other direction.

The more important of the tombs (Fig. 5) consist of horseshoe-shaped

stone monuments resembling palanquins moulded into eccentric shapes of various kinds, which if allegorical to the Oriental mind conveys nothing to the Westerner or European.

COREA.*

Corea, like China, has (properly speaking) little architectural history, and is interesting only as being the connecting link between the Flowery Kingdom and Japan. This lack of an architectural history is due partly to the perishable quality of the building materials, and partly to the want of a religion, the prime factor in the creation of monumental work.

*In compiling the present sketch, the author is greatly indebted to Mr. Percival Lowell, whose thorough knowledge of Corean matters is so well known throughout the far East.

That a country should lose its religion through a mere caprice seems incredible; yet such is the case in Corea. For, during the Japanese invasion of 1598, a number of the Mikado's forces disguised themselves in the broad-brimmed hats of Buddhist priests and so obtained admission to the city. After which the Corean king decreed that no priest should ever set foot within the gates of a walled-city again.

Buddhism being thus banished from the towns took refuge in the country monasteries; but even these from their remoteness soon lost popularity with the rich and fell gradually into disfavor, until to-day they are indeed few; and what still remains of religion for the Corean has dwindled into a few superstitions remembered by the lower classes, and a mild form of Confucian philosophy for the nobility and gentry.

As no new temples were built, and the old ones have been allowed to fall into ruins, nearly all traces of religious architecture have vanished, and to-day there is only one single pagoda throughout the entire capital of Seoul, and that is left neglected in the backyard of an irreverent citizen. This pagoda nevertheless is of great interest to the archæologist; for though its origin is undoubtedly Chinese, it shows clearly where the Japanese obtained the model for their square pagodas. The same may be said of the very rare examples of Buddhist temples found occasionally attached to the rudely built monasteries in the country, but whose architecture may be more profitably studied in their apotypes of Japan.

Investigation is thus reduced to palaces and domestic dwellings, and since almost all these are of wood and paper, our own researches are still further limited to those of the present day.

But Corea like China has been very careful to keep up the *traditions* of her building-art, and one is quite safe in assuming the houses of Seoul, Chemulpo, Gensan and other cities of to-day, to be almost identical with those of the thirteenth, fourteenth and fifteenth centuries, and even earlier.

The domestic architecture of the Hermit Kingdom is exactly what one would expect in a country, spiritless and unambitious, which has devoted its entire time to scraping together sufficient tribute in order to be let alone.

That is to say the king and government officials are decently lodged and the poor live in hovels.

Indeed, the *law* allows no man save the king to spend over \$1,000 upon his house, and none but he may have over one hundred rooms* in which to dwell. On royal palaces alone is paint permitted to be employed, and the use of round columns instead of square posts is a privilege likewise arrogated by royalty, as the circle is considered the more perfect form.

This latter consideration is, however, forgotten when it comes to the rafters, all of which in kings' palaces are square, while in the houses of the people they are round.

These and myriad other restrictions binding all non-royal architecture, magnificence is perforce denoted not so much by artistic beauty and extent as by a multiplicity of approaches, and by the number of these, does the Corean "swell" assert his dignity and importance.

The first feature met with in the residence of any ordinary high-class official is the Red-Arrow-Gate, a sort of rude triumphal arch, which, as hinted before, is of purely Tartar origin and little changed from its primitive form.

It consists of two tall uprights bound together by two horizontal cross-pieces, through which a number of slim shafts or arrows project upward from the lower and through the upper beam. Two spirals so twined together as to fill the area of a circle, and placed at the middle of the upper cross-piece, form the only decoration—a thing held in great veneration; first, as representing the positive and negative essence of Confucian philosophy, and, secondly, as the device or armorial-bearing of the nation.

After the Red-Arrow-Gate the visi-

*A room is reckoned, according to an old standard, as four feet long and four feet broad, or sixteen square feet.

tor approaches the gate proper, or "mun" (called "mon" in Japanese), which glories in some fanciful name, as "Gate of Extensive Wisdom," "Gate of Virtuous Contentment," etc. This portal resembles the walled entrances of Tien-Tsin and other Chinese cities, and like them consists of a doorway piercing a wall and surmounted by a house, looking as though the lodger had objected to living on the *rez-de-chaussée*, and had hoisted his entire home higher up and well out of the damp.

This pavilion or kiosque, which is used for a band of music when the owner can afford such a luxury, is open on four sides and surmounted by a beautiful roof of tiles, festooned at the corners and sides, and graceful in the extreme. It is in these roofs that the Koreans far excel their teachers, the Chinese, and it is to Korean taste in this direction that we owe so much that is beautiful in Japan.

The kiosque, from its lofty situation, makes a pleasant retreat in summer for those of lazy philosophic taste, who enjoy studying human nature as it hurries and bustles below, and it is a favorite *mise-en-scène* for the hero in Korean novels, who, though sometimes a lover, is always a student, and here muses on life's changes and chances for good and evil.

The gate or "mun" opens upon an enclosure, which contains another enclosure, which encircles still a third, and so on, to any number, according to wealth of the owner, until at last one arrives at the house. Here an Occidental would expect a climax, and with reason. Nothing, however, can be further from the fact. The Korean seems always to have the rules of perspective in his mind and so makes his last object in the *limits* the smallest, if not the most insignificant of his composition.

A flight of three steps leads to the top of the sill or foundation, which is of stone and girt about with a verandah, the use of any more than three steps by any mortal not royal being a cause for decapitation.

This stone foundation is more than it appears at first sight, being very

much like the Chinese kang, and used for warming the house. A fire is built in an outdoor fireplace at the side, and the smoke and hot air passing through a series of tortuous flues warms the floor of the building.

The theory of this arrangement is that the feet will thus be kept warm, while the head remains cool. But unfortunately the *practical* working is not so felicitous. For it requires a long time for the stone slab to be properly heated, and when once this has been accomplished, the temperature often rises so quickly that the occupant of the room is well-nigh roasted. However, a layer of earth and a layer of oiled paper somewhat tempers the severity.

The whole affair is an invention of the Chinese, and being introduced into the "Hermit Kingdom" about 1736 A. D., was at first employed only by the king. But during the last eighty years the masses have been permitted to use it, and have done so in a cheaper form.

Above the verandah and furnace rises the house, one story in height, and composed entirely of wood and paper. The bones of the structure, so to speak, are a number of strong posts, supporting the plate and roof-rafters. Between the posts are folding-doors, webbed with ornate lattice-work, which in summer may be unhinged and triced up to the ceiling.

This arrangement is usually confined to tea-houses, restaurants and dining-rooms. In other cases the sides of the houses are half door and half wooden wall, though mud is used by the poor in their hovels.

Within these outer walls or doors are two rows of oiled paper sliding scenes, a green one for night and a white one for day. Over all stretches the graceful many-gabled and festooned roof, laid in black mud planted with seeds, which latter take root and spring up in summer, covering the roof with splashes of warm green verdure.

The interiors of Korean dwellings are always indicated by their exteriors, as in the Gothic style. Thus, if there be two rooms in a house, the fact is

duly registered on the outside by two separate roofs, so that a large mansion is simply a collection of small houses, each having one room, and joined to one another by corridors with lower roofs; while a palace suggests a complicated city interspersed with beautiful gardens.

This is especially true of the old palace at Seoul, built about 1386 A. D., and still in good preservation, and is even more true of the so-called New Palace, erected one hundred years later, whose beautiful grounds, spangled with lotus ponds, cover an area of 1,000 acres. The similarity to a city is still further accentuated by the fact that several hundred court ladies reside within the palace enclosure, each having her own house with its many ceremonial approaches.

Such is the architecture of Corea *en gros*, while as regards furniture,

there is little throughout the country which is worthy of the name.

A wadded quilt to sit upon, a table one foot high, a cupboard, a screen, a picture or painted panel—these constitute the entire furniture and decoration of a room, whether in city or country, in palace or in hovel.

On the walls, floor and ceiling one never sees anything but oiled paper. It is as though one were enveloped in a paper parcel for exportation. True, now and again appears one of those rare bits of pottery for which during the sixteenth century the Coreans were famous throughout the Eastern World, and then these monotonous surroundings seem the only fit setting for such ceramic jewels; but, for the most part, interior beauty and elegance is neglected, taste is forgotten and ambition is lulled to slumber in the "Land of the Morning Calm."

C. T. Mathews, F. A. I. A., M. A.

[TO BE CONTINUED.]

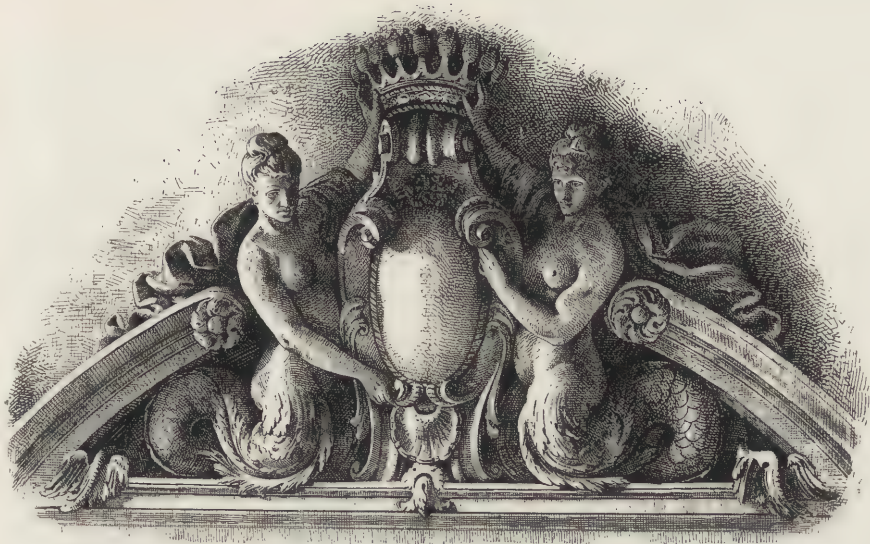




Fifth avenue, New York City.

RESIDENCE.

M. C. Mellen, Architect



A PICTURESQUE SKY-SCRAPER.

NOBODY, except owners of land upon which they purpose to erect sky-scrappers, and have not yet effected their purpose, will dispute that it is high time to put a legal limitation upon the height of buildings, and a legal limitation that means something. A single soaring aberration in Washington has sufficed to evoke an ordinance that effectually puts a stop to the repetition of the outrage. Even in Chicago a restriction has been imposed. A limitation of the height of buildings to 120 feet is not, it must be said oppressive, and seems to be nugatory, but nevertheless the enforcement of it would have reduced the height of a considerable number of existing buildings. When an architect contrives to erect a towering building which is not further offensive than its dimensions compel it to be, we are grateful to him, and really the most successful of our recent works in this kind do not go much beyond inoffensiveness, nor does the ambition of the designer seem to extend much beyond this moderate point. When an architect, in a commercial building, ten or twelve stories high, produces a structure that is a positive ornament to the city, and that is really picturesque in outline and effect, so that we can

imagine an artist desiring to paint it, not in chosen "bits" but as a whole, our gratitude should go out to him freely.

This is clearly the case with the John Wolfe building at the corner of William street and Maiden lane. In this case the architect has observed and applied the conventions which have been arrived at in the course of the experimentation of a quarter of a century, since many-storied buildings began to be erected for commercial purposes, so that his design is an intelligent summation of the architectural progress of these years in this new undertaking. This would suffice to make it respectable and creditable, but there is more in it than that, for it has character, freshness, and charm, and is interesting not as a theorem, with Q-E-D at the end of it, but as an individual work of art.

Let us recapitulate first the conventions of elevator-architecture that have been so well settled that every competent designer of a tall building accepts and observes them. First, the precept that every work must have a beginning, a middle and an end is at once more necessary and more difficult to enforce in very tall buildings than in buildings in which each story is a



WOLFE BUILDING.
William street and Maiden lane, New York City.

H. J. Hardenbergh, Architect.

member of the composition and a term in the proportion. It is more necessary because if it be not enforced the result is more distressing, and it is more difficult because in a serial repetition of stories devoted to like purposes and of equal value and importance a larger division embracing the subdivisions of the stories must be artificial, and in danger of appearing forced and arbitrary, whereas it is essential that it should appear natural and inevitable. Reflection upon these conditions has led thinking architects to the analogy, more and more closely followed as experience accumulates, of the column as the prototype of the tall building. It must have a base, a shaft, a capital. Each of these must be a group of stories. The shaft must be the tallest of the three. It must also be the plainest and the least varied, because plainness here is needed to give effect to what elaboration there may be elsewhere, and because variety here leads to confusion. The ornament, then, must be concentrated at the base, where it is effective by its nearness to the spectator, but where its delicacy should not be carried far enough to impair the expression of vigor that belongs to a substructure; and at the capital, where it is effective by quantity. A plain, tall middle, which may and almost must be in itself monotonous, with a separate and more enriched treatment of the bottom and the top; this is in general the scheme indicated by the conditions, and carried it out with some strictness in the more successful sky-scrappers.

These conditions are all observed here. There is no doubt about the triple composition, nor about where one subdivision begins and another ends. The first three stories are emphatically set off as the base, the succeeding seven as the shaft, the terminal two in the roof as the capital. But the designer does not stop with this acceptance of the canons of elevator-architecture. Contrariwise, he begins where a good many respectable designers of elevator-buildings leave off. The mere emphasis of the divisions is apt to entail a stiff, hard and fast, too baldly logical aspect. Here there

are transitions and gradations of which the unusual merit is that while they are interesting in themselves, and while they substitute for the sense of something forced and arbitrary the sense of something continuous and growing, they do not in the least compromise the clearness of nor bring into question the lines of demarcation.

In attaining this result the designer has been favored by conditions that many designers would have found obstacles. The site is of moderate dimensions, say eighty feet by thirty, and it is not a parallelogram, but a trapezoid, with an acute angle at the northern corner. This disposition enforced an unusual treatment, which might have seemed affected for picturesqueness if it had not been so plainly determined by the conditions. The acute angle is truncated, and the bevel is carried through the three-storied base and two stories beyond it where it is merged into a second and deeper chamfer, giving a face equal to that of the remaining wall on the shorter side and admitting a symmetrical treatment of these two. This unusual disposition so evidently and so naturally proceeds from the peculiarity of the site as to relieve it altogether from the sense of something capricious or arbitrary, and, carried out as it has been, makes the architectural fortune of the building. The treatment, indeed, has been singularly happy. While the base is sharply distinguished from the shaft, both by the grouping and separate treatment of its openings and by the emphatic string-course above it, the prolongation of the chamfer through the first two stories of the shaft involves a difference in the treatment of these, and this difference has with notable tact and ingenuity been carried just far enough to relieve the shaft of monotony without impairing its unity. The openings are divided by mullions instead of by piers as above, and in the main walls the doubled openings are united under single arches. The narrower face of wall at the angle is judiciously kept as solid as possible below. It may be from a necessity of the plan that the entrance is placed at the side, and only a narrow window

pierces the angle in the lower story, but it is quite clear how much the architecture gains by this unusual arrangement, in giving mass at the point where mass is most of all needed. The feature formed by the hooded triangular bay of five stories at the angle is as effective and picturesque as it is peculiar, the more effective because its peculiarity is so evidently not the result of caprice but of an intelligent consideration of the conditions. The same may be said of the still more picturesque gable that is the crowning feature. It looks so easy and so natural that one forgets how difficult a feat of design it is. Here are two wall faces, made equal, be it noted by art and device, meeting at a very obtuse angle, and carried up a hundred feet in the air. How to unite them by a crowning feature? Architects will agree that it is not easy. Probably most architects would solve it by crowning the two walls with a parapet and rearing a gable behind them, leaving it to be inferred upon what this gable stood. But they will admit the superiority to this obvious and objectionable arrangement of the solution here hit upon by which the two faces are not only carried up to the cornice line, but continued as the sides of the gable, while a third chamfer enables a central wall face, at right angles with the axis of the building to be erected between them, and appropriately to crown the edifice.

The detail, one may say, follows naturally from the irregular disposition that proceeds from the peculiarity of the site. A very free and plastic architecture is needed to follow so

irregular a scheme. Fancy an attempt to clothe such a structure in classic forms! Although, as we have seen, the disposition arrived at is not the result of caprice but of necessity, it is characterized at the first glance by oddity, and a style that is quaint to the point of oddity is the most appropriate style in which to express it. The Dutch Renaissance is eminently such a style. It has besides its general appropriateness, a special and local appropriateness to a building erected within the precincts of the ancient Dutch settlement and the very irregularity of which is a consequence of the Dutch street-plan. It is applied here with so much ingenuity and cleverness that it seems to be rather developed than applied. The old market in Haarlem, that most characteristic Dutch monument of the sixteenth century, has been very freely drawn upon for suggestions of the detail, especially of the crowning member, with its dormers and its gable, but nothing has been used without intelligent adaptation and modification. So free and eclectic, indeed, is the treatment that the Gothic detail of the trefoiled cornice takes its place without jarring. It may be objected that the treatment is not strictly enough utilitarian and commercial, and the objection must be allowed. But whenever, with so perplexing a problem, a designer subjugates its difficulties to the production of a building so picturesque and attractive and individual, we will not attach overmuch weight to the objection, and will not only forgive him freely for bestowing an ornament upon the city, but will be exceedingly obliged to him.



MAIN ENTRANCE.

HELICON HALL, ENGLEWOOD, N. J.

Residence of Rev. J. Craig



Englewood, N. J.

INTERIOR COURT — HELICON HALL.



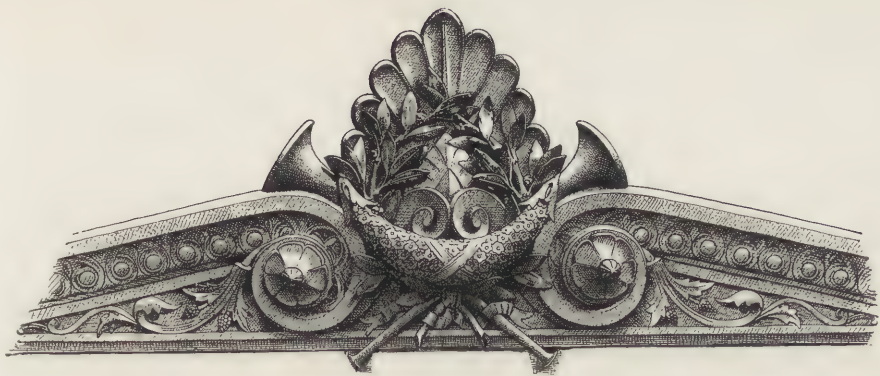
Englewood, N. J.

INTERIOR COURT — HELICON HALL.



Englewood, N. J.

DINING ROOM — HELICON HALL,



NEW BOOKS.

Restauration d'Olympie ; l'Histoire,—les Monuments,—le Culte et les Fêtes. Par Victor Laloux, Architect, ancien pensionnaire de l'Académie de France à Rome, et Paul Monceaux ancien Membre de l'Ecole Française d'Athènes. Paris : Maison Quantin. 1889.

IN No. 18 of THE ARCHITECTURAL RECORD was printed a review of the second book of what may be called a series. It was explained in that notice that an attempt was being made to put into permanent and accessible form some of the many accumulated studies of the government-aided students of architecture in the French academies.

The Epidauros book was the second of that series; we have now to notice the first published, in which, while there is treated no one building quite as unique as the Tholos of Epidauros, there are the temples of Zeus and of Here, the one a perfect example of the regular hexastyle Doric temple, the other a temple of a plan not elsewhere to be found. With these were grouped the very curious treasury buildings, of which a dozen stood at the foot of the hill of Kronos, and the buildings of meeting and of residence of official personages. Within the sacred enclosure there were more buildings than these; porticoes, the *Mētroön*, the Hieron of Pelops, the great open-air altar of Olympian Zeus; and, besides these, memorial steles in incalculable numbers and buildings of Roman epoch. Without the enclosure were also important buildings, such as the great gymnasium, the so-called small gymnasium, the so-called workshop of Phidias, and the largest building of all, that which was dedicated to Leonidas of Elis. It is true that little has been done, either in this book or elsewhere, in the way of published and

accessible studies of the buildings of minor importance, but equal or perhaps greater interest. Neither Germans nor Frenchmen have studied out the buildings of less well-known character, and therefore of the greater difficulty and greater charm as problems, but these latter buildings are given here as they stand; at least in their plans and in some fragment of their superstructure. The most serious effort of the restorers has been given to the temples, their construction and decoration, and to a wholly imaginary working out of the problem, to find the seated colossal statue of Zeus and his richly-adorned throne as they may have existed.

Restoration has its incontestable value; but it is not restoration to seek to create a work of which we have only brief, slight and vague descriptions, and which was moreover of a character wholly unknown and incomprehensible to moderns. The statue of Zeus was of gold and ivory; and what is meant when a statue is said to be of gold and ivory? It is assumed or inferred that the flesh was of ivory in thin plates, and that the draperies were of gold, and in some way or other colored in different colors; some persons thinking that these colors were got by enameling and others that the metal only was prepared in different tints, much as modern gold work is in red gold, in greenish gold and the like. Some modern writers have thought that the hair and beard were of ivory in these chryselephantine statues; some have thought they were of gold. Some have thought that the solid core of the statue was of wood, some have said stone, some baked clay. There is always the theory that the whole statue was toreutic or made of thin plates of metal, hammered into shape, in which case it would have been held together by metal or

wooden bars. The statement that the plates of gold would be made detachable is a puzzling statement. The question whether the ivory was or was not tinted cannot be answered; in fact it is entirely an open question whether these statues were polychromatic in the full sense, or whether the oiled and stained ivory with the alloyed gold would rather form a delicate color-scheme of almost monochromatic effect. There is to be remembered also this peculiar and often-ignored fact that we know of no piece of colossal Greek sculpture, even by means of its Roman copies and almost none of heroic size not so shattered as to be nearly useless as suggestion. In this case, therefore, restoration of the great statue is the merest whim. That a creative sculptor should seek to make a seated statue, answering in part or entirely to the feeble descriptions of ancient writers one might understand, but this would be the original work of the sculptor merely based upon a hint given by Pausanias or Lucian. The presence in this book of the feeble conception embodied in the elaborate drawings facing page 98 and page 94 is an injury to the whole work, casting discredit upon the serious architectural studies of the authors and lowering the character of the book as a conscientious study of Greek art.

The studies of the temple of Zeus are of a very thorough and convincing nature. A plan of the ruins as they exist is given side by side with a most elaborate drawing of the restored plan, with all its mosaics, and these plans are each on a large scale; the restored plan so large that very minute details of the ornamentation can be shown. The exterior order of the temple is then given in outline on a scale nearly that of our American four-feet-to-one-inch drawings, and this is carried out on a still larger scale in the highly-finished double plate at page 72, in which the painted details whose traces are found upon the marble, and some of which the traces can hardly be said to be sufficient, are rendered in monochrome.

A word here of these restorations: it is familiar to all who have examined architectural fragments even in the museum at Athens that the painting which has disappeared has left behind it a perfect record of the pattern by means of the contrast of whiter with more discolored surface. In some few cases the patterns have been firmly outlined by the point. What the colors were is another question; but our authors avoid this difficulty by giving the patterns in black and white only. The text (pp. 73 ff.) gives minutely the reasons for the insertion in the illustrations of the different

details which might be thought doubtful. Indeed the candor of the authors is worthy of all praise, and if any questionable piece of restoration remains anywhere unexplained it can only be because of the great number of details which conceal and confuse one another in so extensive an undertaking. Especially interesting is the question where "the twenty-one round shields of Mummius" which Pausanias tells of were placed. Our restorers place them on the architrave, almost as their inevitable destination; six are on the eastern front and six on the western, on the axis of the columns, and two are set on the northern and southern sides at each corner of the building in a return of the ornamental band made by the gilded shields and the running patterns between them. In this way twenty shields are provided for, and the twenty-first is put up in an acroterion of the western pediment, corresponding to a gorgoneion at the eastern end, which was dedicated by the Lacedæmonians, it appears, and certainly in that place. These and similar decorative features, being as they are all open to some doubt, seem of minor importance when considered one by one, but the task of restoring a temple of the fifth century, even in drawings, to something like its original beauty is a task worthy of any artist and any student, and such restoring consists in determining and combining details. By a process of elimination the less authentic and the less probable being cast aside and forgotten, while the nearly certain and the certain seeming are retained, the lost aspect of the ancient structure is brought before us again, sufficiently for our large instruction and great comfort. The ceiling of the narrow aisle between the naos wall and the inner colonnade may not be exactly at the level where it is shown in the plate facing page 94, but a ceiling was there, or thereabouts, and that is the important thing. A matter of more moment and of more doubt is the hypæthral opening which our authors assume to have existed exactly over the sunken pavement of black marble in front of the seated statue of the god. Our authors assume that this opening extended from the third to the fifth of the seven pairs of columns in the naos, that is that it was at once exactly in the middle of this innermost space between the two rows of columns and also directly in front of and above the throne of Zeus. This is one of those restorations which are sure to be not exactly right. No conjecture, no careful weighing of the probabilities ever avails to discover the facts as they actually were. Moreover there are those who dispute the existence of any

hypæthral opening in these temples of medium size; those who think that no light came except through the doorway and from lamps; those who believe that not the central nave but the two aisles were left partly uncovered, and those who imagine some kind of a clear-story as in a Christian basilica. All these doubters will cry out against the quiet assumption (page 94) that *toute cette partie du temple était à ciel ouvert*. Here we think that our authors have forgotten their usual candor, or perhaps it is that they live among those who are fully persuaded of the truth of the hypæthral theory. It is of course a fact that those who accept this theory do so heartily and with conviction, assuming apparently that the interior of the naos with its paintings and its precious contents must needs have been furnished with more daylight than would pass the eastern door.

Students of the Doric order, as it was accepted by the Greeks in their palmy days, may compare with great advantage to themselves the illustration on page 72, that on page 103, that on page 115, that on page 126, and that on page 134, in which the orders of different buildings are given on a large scale and with the evidence of minute accuracy. They do not generally differ very widely among themselves, for most of them are of the central time, but there are curiosities among them, and one would like to see the effect of a building having the order of the portico in Antis of the Metroön (pages 115 and 116). The text is worth reading in connection with these carefully drawn details. It is matter of regret that the attempted restoration of the temple of Here has not been carried farther than the plan on page 105. This is the temple which is of such unusual proportions in its plan; nearly three times as long as wide, sixteen columns to six. In this temple also is the curious naos divided into nave and chapels as it were, four half enclosed compartments along each side wall, which compartments contained a wonderful museum of works of art dedicated to the goddess, among which in the third compartment, on the right, stood the Hermes of Praxiteles, which was found in the ruins close by. Again, in this temple, alone of all that are known to moderns, columns of different patterns and varying widely among themselves stood side by side. Nine different patterns of the Doric capital, with as many widely differing curves of the echinus, are found among its ruins, and the shafts vary from the oldest with sixteen channels to those of the later time with twenty, and differ also in their relative diameters and in their entasis. All this is con-

nected with the story told by Pausanias of a wooden column which still remained in his time, and our authors infer that substitution of stone columns for wooden ones went on slowly during the centuries of the temple's existence.

The Philippeion offers to lovers of later art Ionic and Corinthian capitals and other members, all of interest even in their shattered condition. The Ionic order in particular is unusually simple and straightforward, as if such an order had been decreed and was then to be furnished at the least possible cost of labor and time. This building was a circular room—a *tholos* like that of Epidauros but much less rich and much smaller. It had an Ionic portico without of eighteen columns and an order of engaged Corinthian columns within. All this is sufficiently shown by the remains; the great German work on the excavations, published from year to year, 1876–1880, offers these facts to whomsoever will search and compare, and the still more extensive definite and orderly German publication now in hand will be found to give the same facts and nearly the same conclusions drawn from them. One thing alone would seem to demand more explanation: the presence of the windows in the naos wall above. As these, if really traceable here, are the only windows known in Greek construction, the evidence for them ought to be made conclusive.

The great quadruple plate which precedes Book III., accompanied by a double plate of a restored plan, gives the restored elevation of all the buildings in the Altis of Olympia, except in so far as they conceal one another. It is here that the south flank of the temple of Zeus is shown and the western end of the south flank of the temple of Here; and between them, thrusting itself in at an angle, the gateway of the sacred enclosure of Pelops. Here, on the extreme left, is the round building, described above, dedicated to Philip of Macedon and his race, and beyond it the Prytæneion; this latter a sufficiently bold imaginative reproduction. To the right is the south flank of the Metroön, or temple of the mother goddess, of which deity it may be said that nothing is known to moderns, and beyond this are the fronts of the treasure houses backed by the high and solid wall which, in its turn, is overtopped by the black hill of Kronos. This plate is an admirable piece of photographic engraving and made from a drawing of great merit; it is spirited enough to deserve framing.

Besides the large plates there are in the text many photographic illustrations, some made

directly from the sculptures of the temple of Zeus, others from line drawings of these and other sculptures, some again from terra cotta ornaments, bronzes, elevation drawings of details and measured plans. In the preliminary chapters there are also some interesting drawings of the site encumbered by its ruins. These preliminary chapters contain an account of the earlier and slight investigations made by French expeditions and the more thorough one carried out by the German government. It may be said that everything of importance to the student is given here which the larger works contain, except only the other and less valuable sculptures and farther details of the present ruined state of the buildings. If the reader confesses to a slight feeling of disappointment, it will be at the non-appearance of attempts at restoring the treasures, the minor temples and the other buildings of previously unknown or little known type. The bold suggestiveness of our two authors would have been in place there. What we have is valuable as a record and as an almost convincing and almost complete restoration of a Greek temple of the first class.

Sir Frederic Leighton Bart., P. R. A. An Illustrated Chronicle by Ernest Rhys, with Prefatory Essay by F. G. Stephens. London: George Bell & Sons. 1895.

Sir Frederic Leighton and his art are considered in this book, in hardly more sentences of record and criticism than should go to an exhaustive review of the volume. The reproductions of his work therein contained seem to demand as much description and analysis as the whole body of the artist's work receives from the authors. Mr. Rhys gives us only sixty pages in all, and Mr. Stephens not even twenty: quarto pages indeed, but pages of large type and wide margins; and this is the whole book as far as letter-press is concerned. Only two pages are allowed to that which would most interest the readers of *THE ARCHITECTURAL RECORD*, the "Decorative Works," by which is meant, here, wall painting. It is true that there are but few wall paintings named: the *Industrial Arts of War* and the *Industrial Arts of Peace*, in the South Kensington Museum; *The Wise and Foolish Virgins* at Lyndhurst; *The Cupid with Doves*, two designs for London drawing-room freizes, and one for a New York ceiling; *The Sea gave up the Dead which were in it*, a roundel for St. Paul's Cathedral; the panel for the Royal Exchange, *Phenicians Bartering with Britons*. It is the more to be regretted that the

chapter on decorative works is so brief, for the above list does not comprise all, or nearly all Leighton's painting which is strictly decorative in character. Many another composition, even among those given in the plates of this book, is full of the true mural painter's feeling.

The sixty pages devoted to the record of the artist's life and work is a sufficiently clear and intelligible paper on the subject. There are oddities of English composition in Mr. Rhys's pages, such as "nothing could be more mistaken" (p. 23); "admirably architected walls" (p. 45), and the like. On the other hand there are many suggestions in it which are of positive value and might well be noted by any one studying the plates of this book or the artist's original work. Such a piece of work is made especially difficult to its author in two ways—first, by the necessity of making it what is thought readable at the expense of systematic presentation of the subject, arranged either by chronology or by the character of the work; and, second, by the necessity of seeming critical, when in reality you are only laudatory in your remarks. This latter difficulty has greatly hindered Mr. Stephens in his introductory essay. It is clear that one is not free to compare and analyze and to say all that one thinks in such a connection as this. The dithyrambic must needs carry it over the purely critical in the style of such an essay. The two papers taken together are to be considered merely as a brief account of the artist's important work and the conditions under which it has been done; such an account as only can be given during the artist's life and before the time has come to make up his biography. A List of Exhibited Works, from 1850 to 1895, completes the book so far as the text is concerned, except that there is a tolerably complete index.

Sir Frederic Leighton belongs to that class of artists, not numerous at the present time, which treats very arduous work and the resulting knowledge and power over form, as strictly subservient to artistic requirements. The value of his example to all students of art is in this: that he treats every subject which he touches, so as to make it a thoroughly interesting design, or part of such a design. In his early days, before 1865, let us say, his color was sometimes terribly dull and ashy, but this difficulty, perhaps as much caused by the pigments he used as by the artist's way of conceiving color, he has overcome. In his later work, while it cannot be said that color is his specialty, or that he sees his composition in color masses primarily, it is yet certain that the color tone is generally quiet, and, in a sense,

complete, that there are no spots, a virtue especially to be noted in very large compositions of many figures in costume, and that harmony at least if not the ultimate charm of color is obtained. In looking at the large composition in the lunette at South Kensington, the *Industrial Arts of War*, it is evident that not color but line and mass and action and expression are what the artist has cared for. This, however, may also be said of Michelangelo's paintings on the ceiling of the Sistine Chapel, paintings which it is customary to ignore, as pieces of color composition, but which are really beautiful in color, satisfying and enjoyable far beyond what is usual to find in large, decorative compositions. It is evident that an artist may enjoy color-harmony without making it his chief aim, much as a sculptor may model a statue with the intention of tinting it, having form chiefly in his mind, but remembering that the form is to be invested with color and modified by means of it. Among Leighton's pictures of the years since 1870 there are probably none of which the color is harsh and disagreeable, or even deficient in such a way as to mar the work of art. On the other hand there are perhaps none of them delightful in color in the sense of presenting this to the spectator as the first and most prominent charm in the painting.

Line and mass therefore, admirably conceived and combined, the composition arising naturally from the subject, whether literary or purely artistic form the chief theme of this artist's thought and care. This is as much as to say that photographic reproduction does excellent justice to the paintings as well as to drawings and studies which have been chosen to illustrate this volume. These are extremely numerous. There are probably more leaves of picture than there are of text. Of the illustrations fifteen are photo-gravures, two or three of them indistinct in a way not easy to understand, but all interesting and some extremely fine. Then, of other photographic prints we have a classified index, following which we find twenty-one "Figure Subjects," nine "Landscapes, etc," four large portraits, seven wall paintings, and perhaps forty studies of different kinds. Besides these there are eight representations of Leighton's remarkable works of sculpture and four views of the decorative interior of his house in London. These pictures taken together are of very great interest. They contain a body of contemporary work remarkable for its impressiveness and general high character; the portraits and studies of single heads are as valuable in their way as the large compositions and with the finished works,

thorough and incisive studies which convey very clearly the scarcely needed explanation of the means by which mastery has been obtained. As regards these studies, some works not mentioned here under that name are to be taken as studies and nothing else, such as the painting of a condottiere which is to be found among the pages of the List of Exhibited Works and which is clearly a careful study or clever reminiscence of the famous statue at Venice. In the same part of the book are found a series of pencil drawings of heads, some of them immediately recognizable as belonging to well-known works of art. Of much earlier drawings made by the artist for his own instruction, the lemon tree, at page 18, the Verona Monument of Mastino II. and the Venetian *vera di pozzo* or cistern-head of Byzantine style, both at page 6, are of extreme interest. The artist's English habit and association shows perhaps in these delicate and minute and moreover accurate drawings with the point. The belief in detailed fact rendered for its own sake as an important branch of artistic study would seem to be peculiarly English, or at least non-French in modern times.

The carefully worked out landscapes, given at page 10, are further examples of the patient and affectionate "going to nature," which has formed so much of this artist's self-imposed training. They are probably almost topographic in accuracy so far as they go. The views of the Athenian Acropolis and of the island of Aegina, seen from the Acropolis, are certainly as close to the facts as it was possible to bring a black-and-white study. Further investigation of the matter of studies shows at page 40 several careful drawings made in preparation of the painting called *Captive Andromache*, which was exhibited in 1888. There is first the study for the whole picture with undraped figures, then the same composition with the drapery insisted on—picked out in white—outlined in black, then larger studies of single figures. In connection with these one may examine the clay studies for paintings, as on page 8, the *Iphigenia*, and at page 48 the *Cymon*, for the *Cymon and Iphigenia*, exhibited in 1884, and at page 48 the *Perseus and the Andromeda and Dragon* made for the picture of *Perseus and Andromeda*, exhibited in 1891. By the freedom and vigor of these preparatory studies in solid form the student is reminded of the remarkable success achieved by the painter when he turned to sculpture on a large scale and produced that statue of the athlete struggling with a python, which was a feature of the Paris exhibition of

1878. The design for the Jubilee medallion is indeed of no value; but there is nothing to surprise the student in this. The medallist's art has received no attention in England of late years.

What is of most importance though is the series of monumental pictures. These, whether actually of great size or not, whether of many figures or not, and whether painted upon a wall or a mere framed canvas, are all worthy of respect and of study. It seems that they begin with the *David* exhibited at the Royal Academy in 1865. There is but one figure in this stately composition, but the mountain landscape and the solemn sky complete the design. *Helen of Troy* of the same year, certainly rather conventional, shows yet the feeling for large and grandiose composition. It is matter of great regret that the *Wise and Foolish Virgins*, painted on the wall of the church at Lyndhurst and begun in 1866, should not be given in this book. The *Daedalus and Icarus* and the *Electra at the Tomb of Agamemnon*, both of 1869, are almost monumental in character, and these lead to the powerful and interesting though scattered design of *Hercules Wrestling with Death for the Body of Alceste*, which was hung in 1871. The years 1872 and 1873 are given as the dates for the two large paintings in the South Kensington Museum, but these are clearly the years of the cartoons, for as late as 1878 work was still going on upon the *Peace* subject, and the other picture had not been long on view. These two large paintings seem to have given to no one any very intense pleasure; perhaps their themes are too remote and vague; perhaps the modern world has ceased to look to wall paintings for enjoyment, and regards them as it does wall papers—as perfunctory decoration. These are noble pictures, however, and will bear long and minute examination. In no modern paintings of very large size is it more evident than in these that the artist was perfectly at home in a vast composition of many figures in vigorous attitudes of motion. It is impossible to describe or analyze in this place those two elaborate designs, and it is only left to express regret that the book before us allows only slight and inadequate reproductions of them.

A very late picture, the *Phenicians Bartering with Britons*, intended for the Royal Exchange in London, is as much a wall painting as any, and is of unusual interest in a combined artistic and historical way. The twenty years between this picture and those named last previously have been filled with very honorable and worthy artistic work, and the illustrations of this book give of it all some partly adequate account.

Antonio Allegri da Correggio; his Life, his Friends and his Time. By Corrado Ricci, Director of the Royal Gallery, Parma. From the Italian, by Florence Simmons. With 37 full-page plates and 190 text illustrations. New York: Charles Scribner's Sons. 1896. 4to pp. xxii, 408.

In 1579 Correggio, who had been a painter from his boyhood, and who was now about twenty-five years old, first undertook a piece of mural painting on a large scale. It was the domed ceiling of the convent parlor at the Benedictine monastery at Parma, where the Abbess at that time was a person of family and distinction. The square room is roofed by a curious vault whose general shape is that of a four-sided dome, but which is divided by sixteen ribs, and as many arches, which leave above the wall sixteen lunettes. These lunettes the painter filled with compositions in monochrome. Groups and single figures of classical subject are treated like pictures of sculpture, the attempt being to represent or suggest statuary placed in niches. Above these rises the curious ridgy vault of the cupola; and all of this surface has been treated by the painter as a single green bower of foliage, as if a solid roof of vines, supported upon a light trellis, was seen from below and within. Oval openings in the trellis and the green mass of vines show groups of children, as if these latter were playing in a gallery around the base of the dome. Finally, a very delicately painted picture of Diana in her Chariot still exists upon the sloping hood above the chimney of this room, and is all that remains of the original decorations of the walls, which have been altered and marred at every change—and there have been several changes—of the places of the doors. In the book before us the representations of these important frescoes are scattered through the volume, used as head-pieces of chapters; one lunette at each chapter and beneath each lunette one of the ovals with its *putti*. In fact the division of the text into sixteen chapters seems almost to be a deliberate preparation for the paintings which were to adorn their opening pages. Besides these photographic prints, a large photogravure at page 160 gives a general view of the whole dome. It is printed in green, and the general aspect of it is more successful in rendering the original than could be expected under such very untoward conditions.

On page 184 of this beautiful book begins the account of Correggio's wall painting at Parma. He was twenty-six years old when he returned to Parma after a considerable absence. Immedi-

diately upon his arrival his marriage was arranged and the painter settled down to serious work in the church and monastery of S. Giovanni Evangelista. The church was then, as it is now, a good building of the later Italian Renaissance. Its interior, as shown in a good photographic picture on page 188, is a refined and imposing design of the last years of the fifteenth century. Each pier of the nave arches is composed of four Corinthian pilasters whose entablature is arranged with corner breaks so as to form four complete *ressauts*. The tower of the church and the cupola, which is adorned within by Correggio's frescoes, are given in a photograph on page 192: the tower is of a very good design of a date slightly later than the interior. A picture of the very beautiful Renaissance door and windows of the Chapter-house is given on page 195, and one of the choir stalls is on page 212, a mere suggestion of the splendid composition in architectural woodwork and elaborate carving which adorns this fine church. The dome over the crossing of the nave and transept is adorned with a great fresco by Correggio, and the half-dome of the apse is filled by a painting of about 1590, copied from Correggio's work in the former apse, which have been destroyed in rebuilding. Of this latter a picture is given on page 213 and very successfully; for the composition of the painting itself is perfectly shown, while yet the architectural framing is comprehensible and not unduly distorted. But with the central cupola, Correggio's own almost unaltered work, the difficulties of photographic reproduction have been much greater. The cupola itself is shown as perfectly as such a concave surface can be on page 197. If the picture had been ten times as large the subject could not have been better interpreted. The mind at once explains to itself the foreshortening of the figures; and their poise and their position in space is felt to be natural. Following this come views of the different groups; five of them on a much larger scale, and these five almost complete the circle of apostles with attendant angels painted on the lower part of the dome and above the cornice of the drum. With these are two studies whose originals are in the Louvre, and a large photogravure of one head of an apostle. The subject of the dome painting is the Ascension, and it is so treated that the figure of the Redeemer alone occupies the centre and crown of the cupola, while the eleven apostles are seated in the ring below, accompanied by many youthful angels. The bodies of the apostles are generally nude, and large masses of drapery sometimes thrown over the shoulders, are laid heavily

upon the thighs and knees. The angels are grouped with the apostles in a way that is unusual, and which unites them with the group far more than has been made possible in other such paintings.

The four pendentives of the cupola are represented in photographic pictures at pages 208 and 209. These four compositions consist each of one of Evangelists grouped with a father of the Latin Church, as for instance St. John and St. Augustine, where the bishop, an aged man with a fine bearded head, is listening intently to the youthful apostle, who accompanies his discourse by a natural and familiar gesture of the hands. In this long series of photographs, this important combined work of the religious painter and the architectural decorator is well transcribed, and one misses only the paintings in the soffits of the great arches which the author insists upon as Correggio's own work, and praises unreservedly.

Of other paintings in this church the author thinks that one compartment of the frieze which runs along the wall beneath the lunettes of the clear-story is by Correggio's own hand; but what it has been thought worth while to reproduce is a youthful St. John with the eagle, filling the lunette above the door in the north transept. A large photogravure at page 218 reproduces this fresco with what seems unusual success. It is an admirable composition, and in a certain marked way characteristic of the Master.

The third important undertaking by which Correggio was to immortalize himself was begun only a few years after the work in S. Giovanni, and this also was in Parma. The cathedral of that city is not important in the way of architecture; its exterior is a fair specimen of the unorganized, unmeaning round-arched style of Lombardy, contemporaneous with other Italian buildings equally poor as building, but more richly adorned. A photograph on page 248 gives a view of this cathedral from the southeast showing the apse and south flank; for in this church the orientation is perfect. It must be said once for all that the architectural views are chosen with great discretion and are made to give all that such little pictures can. The well known front of Parma Cathedral is not given, and the much more suggestive southeast view is substituted for it to the great edification of the student. On the opposite page is a photograph of the interior.

About 1525 Correggio began work in earnest upon the cathedral. Papers had been signed some years previously, as explained in the record given in this book, which record includes one most interesting fac-simile. The record goes on

to show that payments to the artist began on November 29, 1526. The dome at the crossing of nave and transept is raised above a very high, square compartment, which pendentives bring to an octagonal form in very awkward fashion. These four pendentives are decorated with four compositions, each consisting of the figure of a saint and his attributes, accompanied by a varied and expressive group of angelic boys, or, as in one instance, maidens. St. John the Baptist and St. Thomas, of Biblical personages, St. Bernard, but not he of Clairvaux, and Bishop Hilary of church dignitaries are the four saints chosen. The four great arches which support the walls of the square chamber from which the pendentives spring are decorated by figures in monochrome, most of which are claimed for Correggio, and of which outline drawings on pages 254 to 259 partly explain. The cupola itself has been found impossible to represent adequately by photographs, and we cannot but regret that our author has not used his refined sense of architectural verities to give us some sectional or other mathematically drawn views. The dome can be explained in this general way: Above the lunettes and their spandrels, filled with painted fruit and flowers, there runs a slight cornice of stone, and above this there is first a painted cornice, upon which stand the apostles, singly and groups of two, the number of compartments being eight, alternating with eight small circular windows. Behind the apostles and above the round windows is a second painted cornice which seems to form the edge of a broad gallery, upon which some forty youthful angelic forms are dispersedly arranged, forming exquisite groups, and combining in a most unusual and striking design with the gigantic figures which stand on the lower level. Above the heads of these "genii," as the text before us calls them, the firmament is clear of figures for a space and then comes toward the centre of the domè the amazing central composition. The Assumption of the Virgin is represented in a way perhaps not attempted elsewhere. A ring of the blessed in Paradise is shown at the top of the composition, as it were, their heads one above another until they are lost in the golden haze. Some of them gesticulate and point to the ascending group below and Eve holds out her left hand with the apple, in a sig-

nificant gesture while several of her companions look at her and not at the Virgin. An angelic figure seems to have leaped from the celestial group and is descending to meet the Virgin as she rises. A great circle of clouds which seem partly to bear up the numerous angelic figures half hidden by them, embraces and surrounds the vast group of the principal figures as described above. The outer circumference of this cloudy ring is not far above the heads of the youthful figures on the gallery behind the apostles, but it is above them and, as has been said, no figures connect the one system with the other. This superb work of art, perhaps the greatest mural painting in Europe, is represented here in a way which cannot but be praised, for although the size allowed the photograph makes them seem inadequate, yet examination and comparison bring the whole design before the student with surprising completeness. The lower ring, as it may be called, comprising the apostles on their ledge and the youthful angels above and behind them is shown in four pictures on pages 262-3. The group surrounding the ascending Virgin is on page 265. A photographic picture facing page 262 gives the centre of the dome and this, although marred by the image of a great tie rod which crosses the composition in a most infelicitous way, is almost as good a representation as could be hoped for of figures on a concave surface.

It has seemed right to dwell upon these unsurpassed decorative compositions and upon the manner in which they are explained by the illustrations and text of this book, even to the exclusion of adequate treatment of the remainder of the volume. It is only to be said that the examination into Correggio's life and surroundings has been carried far by the author and, as it seems, with great judgment and unprejudiced critical faculty. The photo-gravures are not of the highest rank as beautiful plates; the binding is not handsome, although its stamp is copied from the painted bower in the *Camera di San Paolo* at Parma, and the sewing of the copy under examination has been very ill done, so that the book is all out of shape. It is not a splendid and luxurious volume, but it is full of matter of the highest interest and should be read by students of the social side of the Renaissance as carefully as by students of art.

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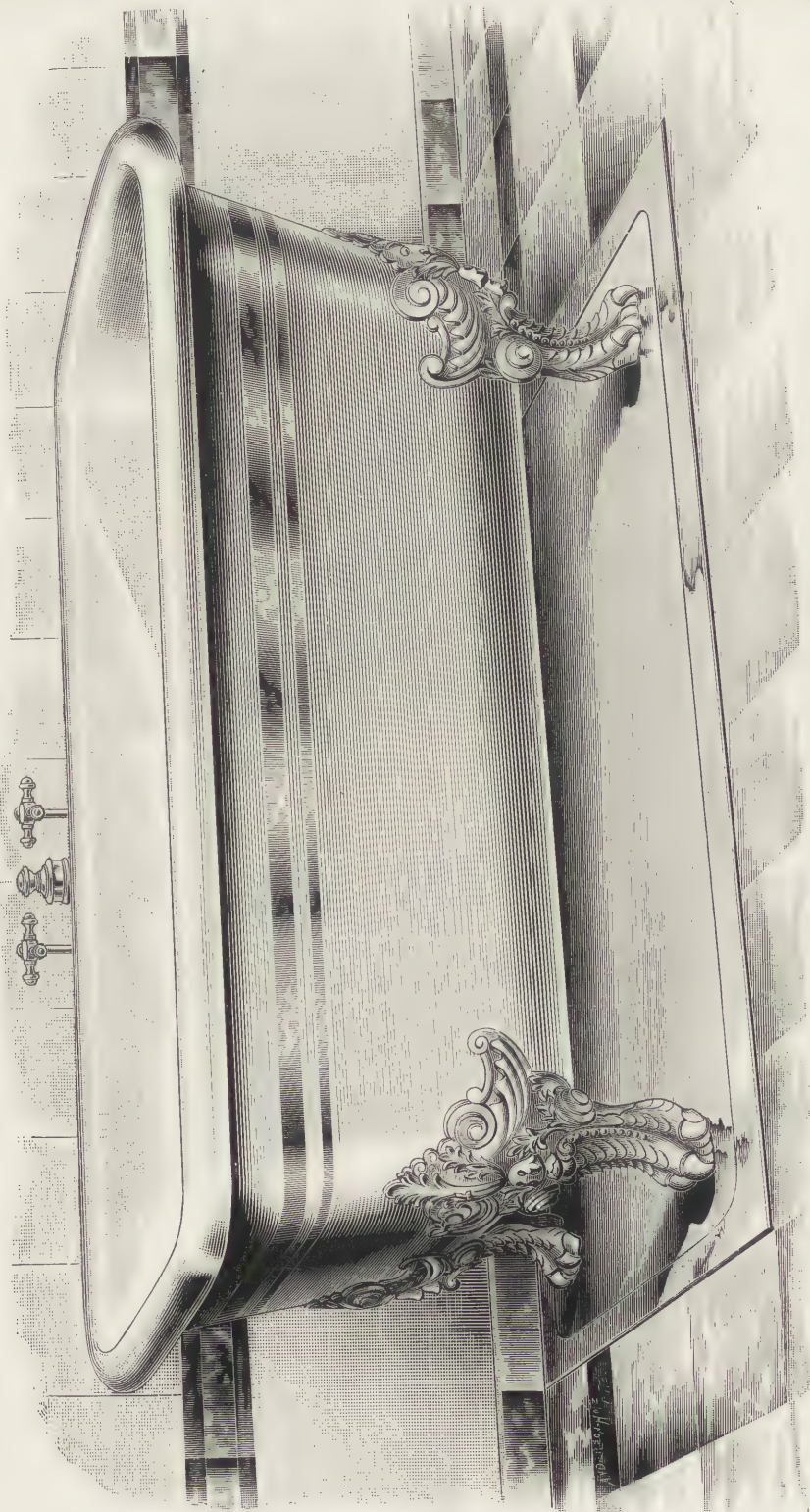
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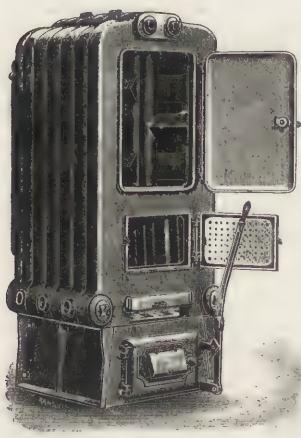
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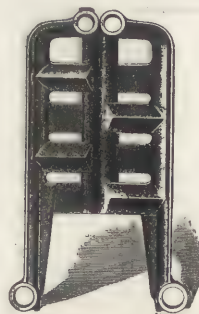


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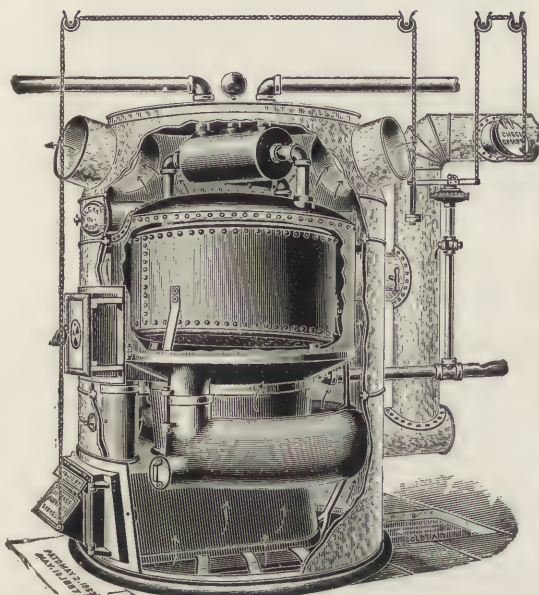
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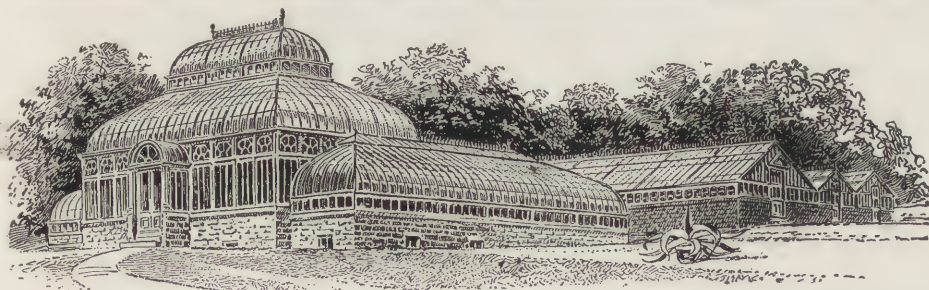
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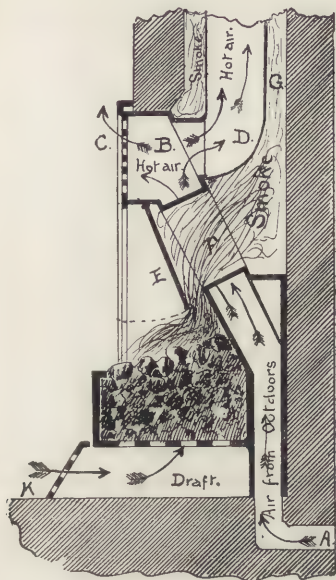
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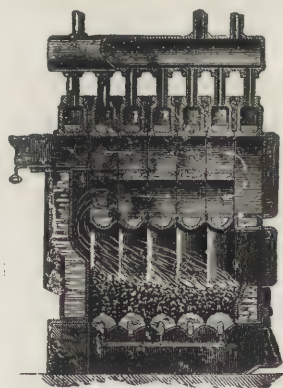
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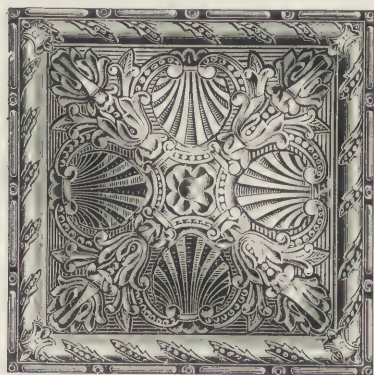
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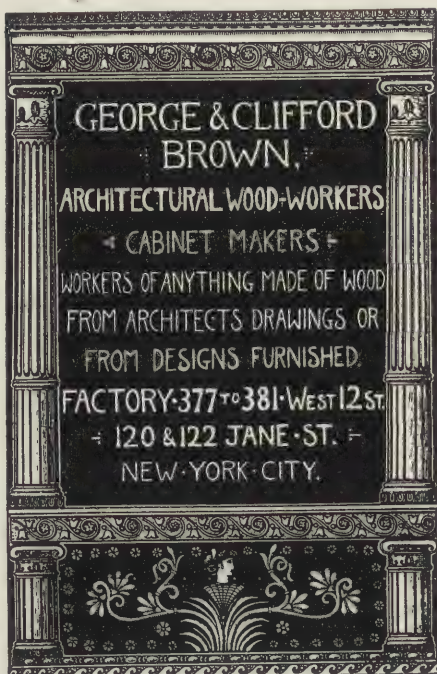
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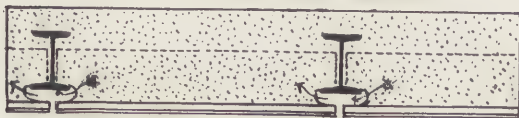
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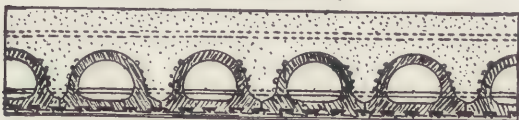
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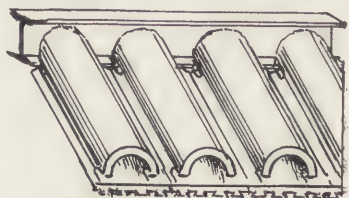
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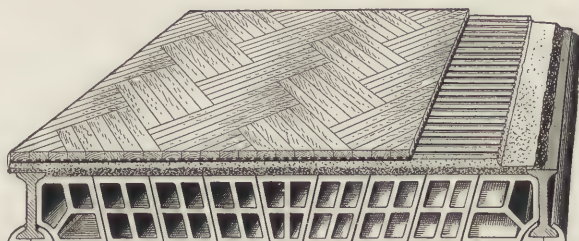
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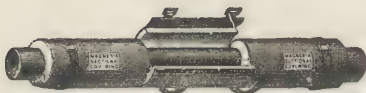
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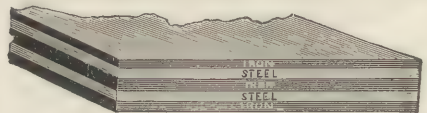
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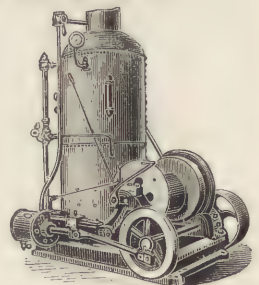
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The Architectural Record.

VOL. V.

APRIL-JUNE, 1896.

No. 4.

THE SMALLER HOUSES OF THE ENGLISH SUBURBS AND PROVINCES.*

Part I.

NOTES ON DESIGN.

THIS first article prefaces a treatment of the subject of the smaller houses of the English suburbs and provinces in four parts, the last of which will be on the important subject of interiors and their decoration, the third will deal with "sanitary science," including the state of the soil as well as the important question of house drainage, and the second will be upon "construction," under the sub-titles of foundation, walls, roofs, etc. The object kept in view will be to exhibit the ideas and methods in common use in the class of houses selected for treatment. We shall hope to illustrate each article with engravings of the works of leading architects, as well as by some plans and elevations and by diagrams of sanitary and constructional points. In the last article especially we shall hope to give some excellent interior work which, though some of it occurs in houses of a more expensive class, still shows what might be done in homes costing up to \$20,000, if it were more the practice to decorate well one or more rooms, instead of dis-

sipating the available resources in bringing every room up to a certain standard of average ornamentation.

The gradual growth of the modern rural or semi-rural style of architecture need not detain us, fascinating as is the subject to any architect. It suffices to say that our ideas as to this class of buildings have advanced since the poet thus ridiculed the craze of the city merchant for a house outside London, when describing him as dwelling in "tight-sashed boxes," where he breathed "clouds of dust and called it country air."

All that we would insist upon historically is that the Anglo-classic school should not be thought to have overlooked the problem, for there are numerous English books of villa designs in the rustic Italian manner, and not a few houses were erected in accordance with that fashion. The Italian villa, however, has never been more than the plaything of the rich, for it requires an amount of detail, and refinement in execution,

* An article describing current practice and requirements in Great Britain.



WATERSIDE—WESTGATE-ON-SEA.

Ernest George & Peto, Architects.



HOUSES AT STREATHAM COMMON.

Ernest George & Peto, Architects.

which is impossible of attainment in houses of this class. The farm house model came in after the equal failure of the Gothic revival to produce a reasonable house, superseding the rustic Italian, the plaster Elizabethan, and the brick and stone Gothic; its only competitor at present is the square, red brick, box-like mansion of the Georgian period; the latter, however, as now revised, contains elements that it owes to its rivals, which give to it an enlarged scope and greater possibilities. The Bedford Park estate (London) represents the first effort of the new school to combine houses of the ordinary accommodation, but possessing each some picturesqueness of design, into a whole, which should not be too ambitious nor appear to be other than a village of houses of some refinement. London extends itself by absorbing the estates of private persons which, as they are made accessible by railways or otherwise, become what is called ripe for development, and are laid out accordingly for the class of residents who may be expected to occupy the suburb. In such estates the requirements of the picturesque are compromised with the desire to utilize every foot of the site, and the calculated sinuous curves of roads devised to attain both, generally fail to attain the latter; for houses working round a curve to be really effective require a freedom of spacing and a careful consideration in grouping that they generally fail to receive; presenting too often the appearance of having fallen anyhow, on to an irregular road. Where such houses, inhabited by the same class, who pay each the same rent, are spaced out about equal, it is affectation to make much of any one at the expense of all the rest; but how otherwise is the unrestful effect of alternating or varied designs to be avoided? To walk through a modern estate is often to review a catalogue of designs whose lack of harmony confounds the mind. The best hope of an estate lies in its gradual development, and in each house being designed for an individual; but this is not the commercial view, which urges the rapid completion of the roads and houses for the imme-

diante occupation of the tenants. The existence, however, on the site, of old trees is a great help, and if some houses could have their principal garden in front, and others at the back, there would be opportunities for good effects in the side elevations, which, when the houses are closely spaced, are very imperfectly seen. As designs in a rural style are very dependent on the grouping of the roofs, chimneys and other features, such perspective questions are of paramount importance.

Seaside houses are a much neglected branch of our subject, and we are pleased to illustrate one example from a popular watering place designed by a well-known architect. The chief requirement, however, of such houses on a sea-front appears to be a capacious veranda, and our example does not illustrate that feature. Verandas are so common in American designs that the hesitation of English architecture in their use will seem strange. The average sea-front house, run up by a builder, has a bowed front, girt with a zinc structure on thin iron columns following round its curve; and in spite of the defect of over-darkening the rooms in our climate, such a veranda is regarded as indispensable.

Of all the attempts made to treat the feature, the most successful, as a rule, is an affectation of a Georgian character, carried out in iron like the wood original, and usually painted a dark olive green.

In regard to other points of the design of this class of houses, it should be remembered that the walls are unfavorably affected by the driving rain and sea breezes, and consequently slate and tile hangings are effective both for health and appearance. In some of the older parts of Brighton are some very interesting examples, the houses having segmental bow windows of the full height of the front, formed of sash framing; the wall space between floor and sill level being apparently of red brick worked to the curve, but in reality is flush tiling jointed to give the effect of the more solid material. The doorways are of wood, with columns, archways and pediment of the common classical de-

sign of the period. A slight crowning cornice of wood completes the facade.

There is about this work a quiet air of comfort and respectability very pleasing after the vulgarities of the bulk of more recent work.

Coming to the general subject, the design of "the smaller houses" in the neighborhood of towns, and especially near London, is limited by building enactments, by the narrowness of the plots and by an average of accommodation which has to be provided. This last condition "depresses" individual efforts at improvement, as it leads to a search after showy effects designed to catch the chance taste of a possible tenant.

Another cause of poor designs is that often architects accustomed to buildings of a more monumental character do not show to advantage in work on this small scale. Sketching in such countries as Belgium and Germany, and in our villages, where farm houses of gradual growth present effective grouping, combined with simplicity of detail, is the architect's best preparation for such work. The great aim must be *simplicity*, the worst defect, the picturesque for its own sake, that is that crowding of miniature features which, supposed to give scale, has in its result no scale at all, for it produces a toy not worth consideration as architecture.

It is a question whether any design of intentional picturesqueness has ever equaled the accidental grouping that may often be met with in old cities or houses of various epochs; where the facts of history are clearly against any deliberate intention of their builders to produce the result we admire.

What ornamental detail there is requires to be very good, but some of the best of our modern examples have no sculpture or modeling at all, and carving of an architectural character even is reduced to small limits.

This character of simplicity, more especially externally, affected by the best architects at the present time, is scarcely understood by the general public, and good examples are regarded often as ugly even by those who might have been expected to have known

better. Recent instances of interest are Mr. Gilbert's studio, in Maida Vale, London, and Mr. Reginald Blomfield's house at Hampstead. The work of Mr. Norman Shaw has always had a masculine character as compared with that of Messrs. Ernest George and Peto, and to eschew the pretty is a good rule for the architect of small houses.

CHIMNEYS.

Two features that must be dealt with are the roof and chimneys, which latter some architects have a trick of exaggerating, so that in some views a house is swallowed up by its stacks. This arises from their defective planning, trouble being avoided by carrying up thin walls of flues one thick and many deep. These in a side view of the house are apt to overlap with other stacks carried up from the eaves, so that from side-and-side sketches the wall of chimneys terminated often at one level, and with one capping.

The tendency a short time ago was to couple two stacks at some distance apart by large flying arches, but at present square plain masses like small towers are much in favor, although they require a management in the flues which is apt at times to be disastrous to their efficiency. The chimney problem arises from the desire to give to every room a fireplace, and possibly also a ventilating flue, systems of heating by pipes being reserved for corridors and halls only; thus the number of flues to be disposed of is formidable.

ROOFS.

As to the roofs, a covering of tiles is practically universal in good work, though green slates are used in some of the square plain houses now coming into favor, in which also hips are preferred to gables. Where a sky line of gables is attempted the intersections of the roofs are a matter of the first importance, the unskillful often making them all meet at the ridge level, producing an unexpected effect in perspective. A dominant roof and a good length of it are found more often in old than new work.



HOUSES AT BEDFORD PARK.

R. Norman Shaw, Architect.



Hampstead.

OAK TREE HOUSE.

Basil Champneys, Architect.

This is a point, however, in which instances can be quoted on both sides in Sussex and Kent. I think the latter will be allowed as the rule, but in Derbyshire and the north examples of ridges at one level must be admitted. One thing, however, is not to be found, and that is those endless *turrets* that are supposed to group with a final touch of the picturesqueness the ramblings of our house builders. Turrets for bells, on churches and stables, if you please, or if Georgian minded, for a capacious belvedere, but spare us the insistence prominence of the unnecessary feature.

HEIGHT OF HOUSES.

As a rule the height of houses is too great, and is specially offensive in the country, because the features of a landscape are not really tall, even the average of trees is not high; and, though proximity to a town justifies taller houses, still the narrowness of the usual plot, and the fact of all parts being generally carried up to one level, have a very detrimental effect on the design of a house of this class.

If parts can be left down, and there is some extension of plan making grouping a possibility, height in parts would not be of so much consequence; and on a site on the slope of a hill may even be advantageous, but "long and low" should be the motto of the designer in this style.

Naturally, it turns upon the internal height of the rooms, and one well-known architect being asked how high he made his rooms, replied, "as low as I dare." It is probable, however, that a reaction will set in against low rooms, for having in the last century been too high through Italian influence, they now threaten to have head room insufficient to swing the proverbial cat.

There is no doubt also that bedrooms in the roof are not popular, and a general demand for flat ceilings in the top floors means an increase in total height. The number of separate bedrooms that is being increasingly required is another problem for the architects, as well as the desire for

more bathrooms. These, however, are matters for the second part of this article.

WINDOWS.

Other points of design turn on the windows, the frames of which when of wood were required by a recent Building Act to be recessed $4\frac{1}{2}$ inches, and as most designers wished to have them on the face, mouldings and other devices were adopted to obtain the required flatness of effect. As this rule has now been abolished the future historian will have a date limit to work by, but the fact of its abolition is a reflection on its authors. Sashes maintain a certain pre-eminence over casements on account of their comfort, and though they are mitigated by a scheme of many cross bars, the "tracery of classic architecture," as it has been called, still, no one has been able so far to overcome the defect of the glazed surface being in two planes, which is the real offence of this form of window. Woodwork in houses of this class is always painted white outside for contrast with the brickwork and from tradition, which, however, makes outside shutters a strong green color.

PORCHES.

Porches are generally unhappy; a strange bulbousness affects the wooden designs, the canopies seem to wobble upon these baluster forms, which, when they fail to be quaint, are offensive. The shell heads affected by Shaw and Devey, if not very justifiable on purist grounds as designs, are generally more successful.

CONSERVATORIES.

The rage for conservatories is one of the difficulties of this class of house, which few seem able to treat with success. There are two methods in use. The first accepts the conservatory as a structure of wood and glass, and endeavors to render it acceptable by some treatment of columns, arches or mullions of wood, with sub-divisions of moulded bars, and the second, which

endeavors to obtain a greater harmony with the solidity of the house, by enclosing the slender adjunct in a cage of brick or stone, arcading or colonading. In this second case the roof is hidden by a parapet, the ridge and furrow system of roofing is supported on girders, a system requiring very little height, while being at the same time very suitable.

It does not follow that if the second method is well carried out a much greater loss of light in the side walls is suffered, if the actual glass area be reckoned up, and compared with the other all wood and glass treatment.

MATERIALS.

The mixture of materials in the design of English suburban houses is a point worthy of notice. In old farm houses, owing to successive alterations that have taken place, there is the picturesque of accident that is pleasing enough, but it borders dangerously on affectation in many modern examples. A general body of yellow brick, with dressings in red, is as successful as anything, and combinations of flint and brick, or stone, are also pleasing. The chief principle in the use of different materials is that a sufficient body of each should be employed; small patches of slate, for instance, in the odd corners of a tile roof are dangerous. Some judicious work by its reasonableness, and

there are cases where upper portions or back parts of a house may very well be constructed on a cheaper system, or with a less costly material, in a manner which is successful in economy and picturesqueness. Such methods and materials will be treated in Article 2.

BUILDING LAW.

In treating of windows we mentioned the effect of building enactments which by their rules, designed against cases of fire or bad building, have more or less hampered designers. In the new London Building Act of 1894 such rules have been much relaxed, so that wood in large boards, dormers, etc., will now probably be more freely used in suburban houses. The requirement, however, of carrying up party walls through the roofs as a parapet is retained, and is regarded by many as a vexatious enactment, although the party wall need not be carried up in the case of a semi-detached villa. Various ways of treating the feature have been attempted; perhaps the best is to mould the wall in stone or terra cotta down to the roof, much as the coping over a Gothic flying buttress was worked.

We now proceed to our second part of "Notes on Planning," in which, after a few general remarks, we shall proceed to deal with each part of the house in order, beginning with entrance, hall and staircase, etc.

Part II.

NOTES ON PLANNING.

A history of house planning has been called a history of civilization, and certain it is that the development of the Englishman's house from the time when it consisted principally of one large room—the hall—through the later Gothic, Tudor, Elizabethan, Jacobean and Georgian periods is one of the most fascinating studies that we architects have. But the historical development is not here our purpose, for we are to discuss the principles on which

our every-day houses are being planned and built.

The general principles which should guide us in setting out our plan are easily defined. Firstly, we should find out exactly what we want, or what our clients want, and then show them how to get it.

Of course the plan depends largely on the site, and we can only give general principles. The view must be considered in setting out the plan and



Hampstead.

MANOR FARM.

Basil Champneys, Architect.



Hants.

COLDHARBOUR WOOD.

T. E. Colcutt, Architect.

also any special characteristics of the site. Privacy is a point always to be considered in planning the different rooms.

Long, useless corridors should be avoided as far as possible, and should always be sufficiently well lighted from the outer air. The hall, corridors and staircase can hardly be more than sufficiently lighted, and it will be found that generally the entrance, hall and staircase will be best placed on the north side so as to let the sitting-rooms face the south, and by the aid of bay windows, etc., be so designed as to catch every available ray of sunlight from east to west; for, as we have none too much in England, we should endeavor to get all we can. The sun adds brightness and cheerfulness to life, and is a destroyer of disease germs; and although it may cause our carpets and our chair-covers to fade, these can be renewed, and it is perhaps as well to remember that the house was not designed for these, but for the inhabitants, and it is their health and happiness which is the more important. Then let there be sunlight in your rooms. The position of the fittings should always be marked upon the plan so that sufficient room is left for these. The position of the dining-room table should be shown on the plan so the architect may see that there is sufficient room for the service, and the position of the sideboard should be also indicated so that its relative position with the service door may be studied. It is important to show the positions of the beds in the bedrooms, as also that of the wardrobes, washing-stands, etc., all of which may lead to an important alteration of the placing of the windows.

And again, do not allow the doors to be hung at the will of the carpenter, but show on the drawing itself which way they are to be hung. It is scarcely necessary to add that they should be so hung as to act as a screen to the room when they are opened, while cupboard doors should open so that the cupboards are lighted from the window.

The position of the fireplace is an important consideration. As a general

rule the fireplace should be in the long side of the room, so as to admit of a group being formed round it; a position between two doors is generally to be avoided. The door should not be placed in a line with the fire; a position more in front is better, and less liable to blow the smoke into the room, and it may be taken as a good rule that the farther the door is from the fire the better and less liable it is to create draughts and cause the chimney to smoke.

We may now here fitly mention a few points in connection with the various parts of the house, merely prefacing these remarks by saying that the general fitting up of the house is to be treated in a subsequent article on "Internal Decoration."

The entrance may be either at the side or in the center. By having it at the side in a suburban house, especially where frontage is limited, the front rooms can be made wider. In any case some sort of porch is needed as a shelter to both visitors and residents.

The hall and staircase has undoubtedly, till within a few years ago, been much neglected. The narrow sites on which houses have often to be built no doubt accounts for this, but still there is no doubt that more might be made of the entrance hall than is often the case. A good square hall, containing an open, newel staircase, well lighted and with a fireplace, doubles the home-like effect of any house, and may be used either as an extra sitting room, if sufficiently protected from traffic, or as a pleasant place to lounge in. A hall should produce a cosy, inviting effect, which may impress the visitor with that air of hospitality and comfort with which we all desire to surround our guests. The long narrow passage, dignified by the name of hall, which occurs in many London houses, is a dreary prospect to any one entering, and, although it is sometimes unavoidable, we should do our best to get rid of it.

There is nothing to equal, for effect and comfort, an open, newel staircase, of which so many grand examples of the Elizabethan period exist, with their

easy-going steps, good square landings and absence of "winders."

A staircase should be at least 3 feet 6 inches wide, to allow of two persons passing comfortably. Avoid long flights without rests, which should occur about every ten steps. The staircase should be built sufficiently strong to avoid all creaking, than which nothing is more unpleasant. The relative height and width of tread is an important point. A good rule is the following, viz., that twice the height added to the tread should equal 24 inches. From this it will be seen that a stair 12 in. tread by 6 in. rise is a fairly good one, but a rise slightly deeper is more usual, and 11 in. tread and 6½ in. rise is a very good size. Stairs to upper floors and servants' stairs may be 10 in. rise and 7 in. tread.

A servants' staircase should be provided in a house of any pretensions.

DINING-ROOM.

Aspect.—Should be north or east, or between the two. If it is used as a breakfast room as well, it should certainly have a few points of east, so as to get the morning sun. In any case avoid west or southwest, as the level rays of the evening sun in the summer tend to make the room hot and unpleasant when it should be cool. We would here emphasize the necessity, by means of bay windows or otherwise, of getting the sun into every living room at some period of the day, and if we cannot have it in the evening, let us have it in the early morning. Therefore east is a very good position for the dining-room. Sometimes, however, the exigencies demand that we should place it facing north, and, for the reasons stated above, it answers the purpose very well. The dining-room should be in close proximity to the kitchen quarters, and in connection with the serving-room or servery, as the case may be.

The shape of a dining-room is of necessity somewhat long in character. A dining-table is at least 4 feet wide, and persons sitting down take up about 1 foot 9 inches on each side; this makes 7 feet 6 inches; then allow at least 3 feet

or 3 feet 6 inches on each side for the servants to pass, and you have 13 feet 6 inches or 14 feet 6 inches, as the case may be. Therefore the dining-room should not be less than 14 feet 6 inches or 15 feet wide in the clear to allow of servants properly passing behind when the guests are seated at table. The buffet or sideboard should be placed at the servery end of the room in a recess provided for it, at the back of the master's chair. The fireplace may be placed at the side, but should not project into the room, unless the latter has an ample width, and even then the fire is liable to incommode the people when sitting at dinner.

With a width of 15 feet a good length would be 20 feet which, with a bay window at end or side, would make an average-sized dining-room for the class of house we are talking about.

A dining-room should be provided with a deep cupboard, useful for the reception of papers.

DRAWING-ROOM.

Aspect.—Probably full south is the best for this room, but practically any aspect between south and west is suitable. The room itself should be bright and cheerful, with plenty of window space, and it should not have that cold, dreary appearance which is so common and tells us that the room is kept or preserved for great occasions or for "At Homes." It should have an inhabited look; it is, we must remember, the ladies' sitting-room, and should be full of pretty nick-nacks, etc. Bay windows, nooks and corners must not, however, be overdone in this or any other room.

Position.—It should in most cases look on to the garden, and a charming arrangement is to have the conservatory in close proximity, but not opening directly from it unless there is some lobby or vestibule between, on account of the heat and damp and the sometimes oppressive scent of flowers.

The size is not regulated as in the dining-room, but will vary considerably with the use to which it is to be put.

The route from the dining-room to the drawing-room is also specially con-



Ascot, Bucks,

THE LODGE—RESIDENCE OF LEOPOLD DE ROTHSCHILD, ESQ.

Geo. Devey, Architect.



Tonbridge.

LEYES WOOD.

R. Norman Shaw, Architect.

sidered by the architect, so as to show the house to the best advantage to the visitor, and in this a well-designed hall plays an important part.

LIBRARY.

This room, in the class of house we are speaking about, generally turns itself into the smoking-room and may be planned in conjunction with the dining-room. If used exclusively as a library, east is a good aspect, as dryness is an important consideration. Northeast is also good. As to position, it is evident that a room which we specially set apart for reading or study, should be somewhat retired from the more frequented parts of the house. A shape nearly approaching a square is good, and about 14 feet by 16 feet will be found a convenient size.

MORNING-ROOM

The library often answers the purpose of the morning-room in a small house. The *sine qua non* of this room is, that it must face southeast or east in order to catch the morning sun. If it faces due east a bay window is a good method of obtaining the southern sun during the morning. It should, naturally, be near the kitchen for convenience of service.

BILLIARD-ROOM.

A billiard-room is a great acquisition to a house. Its position in regard to the plan is not of much importance, provided it is somewhat retired. It may have lavatories in connection with it and the garden entrance. A billiard table is 12 feet by 6 feet, and 6 feet should be allowed all round for the players. This makes a net minimum size for a billiard room of 24 feet by eighteen feet. A very pretty and useful feature in a billiard room is an extra space at one end, where may be planned the fireplace, and which can be fitted up with a card table and raised lounges for watching the game itself. Sociability is certainly a feature of the end of this century, and ladies do not separate themselves nearly so

much from gentlemen as was formerly the custom. This space or nook, then, can be used by the ladies when doing their work, while the gentlemen are enjoying a game at billiards without losing the pleasure of each other's society.

A top light is undoubtedly the best, that of the lantern type with glass sides and lead flat being preferable as less liable to leak. We have often, however, to be satisfied with a side light, and the best thing then is to make the windows as high up and large as possible. The loss of a top light is not much felt unless right in the country, as a billiard room is mostly used in the evening.

LAVATORIES, WATER-CLOSETS, BATH-ROOMS.

A lavatory and water-closet is generally provided in connection with a cloak-room on the ground floor near the principal entrance. Although this is a questionable proceeding, it seems to have become an established fact. In our opinion a lavatory, etc., near the garden entrance is a better method. It is all a matter of privacy, which is the great thing to be sought after in planning these conveniences. For this reason a water-closet opening off a landing staircase is not good; it can be better planned in connection with a bathroom on first floor. The bath is supplied with hot and cold water in connection with kitchen boiler, and it is often convenient to have a lavatory fitted up in the bathroom with hot and cold water, as it tends to save the servant's labor in emptying slops. A small fireplace is good in a bath-room, as much for the purposes of ventilation as of heating.

A bath can be contained in a room about 7 feet square, or about 8 feet by 7 feet, where a lavatory is provided, but a larger size is better where possible. A small bathroom for the servants is almost a necessity in a well-ordered household on the upper floor. These bathrooms should be planned to come over one another so that their wastes may come into the same down pipe, and if they are planned at the

higher point of the drain service they will act the purpose of drain flushers.

KITCHEN OFFICES.

These, of course, vary according to the size of the house, the tastes of the occupier and other such considerations. The great thing in planning a kitchen is to arrange it with a view to cross ventilation, etc., so that the smell of cooking, etc., may not find its way into the house, than which nothing is worse, and yet on a confined site it is often difficult to prevent it.

A kitchen should be placed conveniently for the dining-room and front entrance, and if possible so that the servants can reach the front door without going across the main hall. The size of a kitchen of course varies, but one about 14 feet by 14 feet or 16 feet by 16 feet is an ordinary size. An underground kitchen is the *bête noire* of the household; it increases the service and is inconvenient in many ways.

The kitchen should face north or east, but preferably north, being cool and dry.

Care should be taken in placing the kitchen fireplace so that the window should be on the left of the cook when looking towards the fire, so that she may see what she is doing. The plan should show the space for dresser and cupboards.

Although we often have advice to the contrary, the kitchen should have a wood brick floor for comfort and not a tile floor.

THE SCULLERY.

The scullery should lead from the kitchen, and if possible without having to go through the latter, from the serving-room, and should have a plain tile floor.

The sink should be placed in front of a window, with glazed tiling 18 inches up the walls, thus presenting a clean and washable surface, while the wall at the side is fitted with a plate rack.

The copper is usually placed in the scullery, and its flue should be quite separate from that of the kitchen range.

THE PANTRY.

The pantry should lead from kitchen, and a good place for it is between the kitchen and dining-room. Here the china, glass and silver are cleaned and stored, and it should be fitted with lead-lined butler's sink (with hot and cold water), and should contain glass cupboards of sufficient size, besides the usual iron safe for the plate built into the wall.

THE LARDER.

The position of the larder should of course be selected for its coolness; it should therefore face north, and a good plan is to have a summer larder in the basement, well ventilated from the outer air. A larder should have a window at either end to prevent stagnation of air and to create a through draft. The windows should have a perforated zinc grating to prevent admission of flies while the windows are open. The larder should be placed near the kitchen, yet not sufficiently so as to be affected by its heat.

SERVANTS' HALL.

Even in a suburban house it is a great comfort to the servants to have a special room where they can do a little reading at times and also their needlework, and there is no doubt that architects in this leveling and progressive age will be called upon more and more to study the servants, and we verily believe by doing this we shall add to the comfort of the mistress.

CELLARS.

Cellars should be provided for wine, as by means of these an even temperature can be maintained. They should be fitted with slate or stone shelves, or the iron arrangement late come into vogue. The coals also, where space is limited, may be placed in a cellar, although it is preferable, because more convenient, to have them on the ground floor leading from kitchen yard.

DUST BIN.

Should be of galvanized iron with sloping lid so that the rain may not enter and set up decomposition; it should have two handles and should, it need hardly be said,¹ be emptied daily.

BEDROOMS.

The disposition of the bedrooms on the upper floors depend to a large extent, of course, on the ground plan itself. The aspect should, where possible, be east, southeast or south, in order to get as much sun as possible in the early morning. One would naturally think that they would be planned with especial regard to the position of the bed, but how often do we find that when the house is built the position of the bed has not been considered, and that the head must be placed near a window which could easily have been placed a few feet further away, or that the bed itself is in a direct draught between the door and the fireplace. Moreover, the bed should not be placed so that the sleeper has his eyes on the light, thus, for many reasons, the position of the bed must always be shown on the plan.

No bedroom under any consideration should be without a fireplace.

The fitting up of a bedroom is comprised under "interior decoration," but we may here mention that, although we do not use our bedrooms in the same way as our Continental neighbors, yet there is no reason why they should be as bare as they usually are, and, if possible, a bay window should be given, as it forms a useful spot for a writing or dressing-table. The cupboard should be executed as part of the architectural decoration of the room, and may reach up to ceiling, so as to allow no lodgement for dust. The upper part is sometimes useful for things not often required, but which have to be preserved for occasional use, such as hand bags, etc. The best bedroom and the visitor's room should always have a dressing-room, which, if possible, is to be entered without going through the

bedroom, and should have a fireplace. The hanging of the bedroom doors should be carefully considered, so that when opened they may shield the greater part of the room from the outside, and for this reason should be placed near the corner of the room. As the windows in a bedroom are usually for the purpose of lighting the room and have for a secondary purpose only the enjoyment of any fine views, the sills, as causing a certain amount of privacy, may be kept higher than in a sitting-room, and may be as much as from 3 feet 6 inches to 4 feet 6 inches from the floor.

As we mentioned in the commencement, each site has to be studied specially in regard to the plan of the house and the tastes of the client, but the foregoing notes indicate the principles commonly observed in planning the smaller houses of our suburbs and provinces. In our next article we shall deal with the materials and construction employed in their erection.

Notes.—Our illustrations scarcely need comment. We have referred to the first under "Seaside Houses," while the second and third are examples of estate work. The former is of yellow stock brick with red brick angles, while the latter is tile hung in the upper stories. Nos. 4 and 5 are remarkable for chimney grouping, especially the latter, which is the old square house type, modified by the side curly gable and front dormer. This style of grouping for chimneys is a revival of an old English practice first introduced by Sir John Vanburgh, at Blenheim, where the octagon top stage of the towers are of chimneys connected by arches. Illustration No. 6 is a good instance of minor gables subdued by a dominant roof, and No. 7 of a quiet lodge with an appropriate porch. No. 8 is a large house, but is given as presenting an instance of unaffected composition, combining sufficient dignity with great picturesqueness. The Cedars (Nos. 9 and 10) is a house which cost about \$15,000, and is illustrated by geometrical drawings, which show clearly the requirements and style of a modern house in a wealthy suburb.

Banister Fletcher.



Edgbaston.

ENTRANCE, FRONT—THE CEDARS.

Bateman & Bateman, Architects.

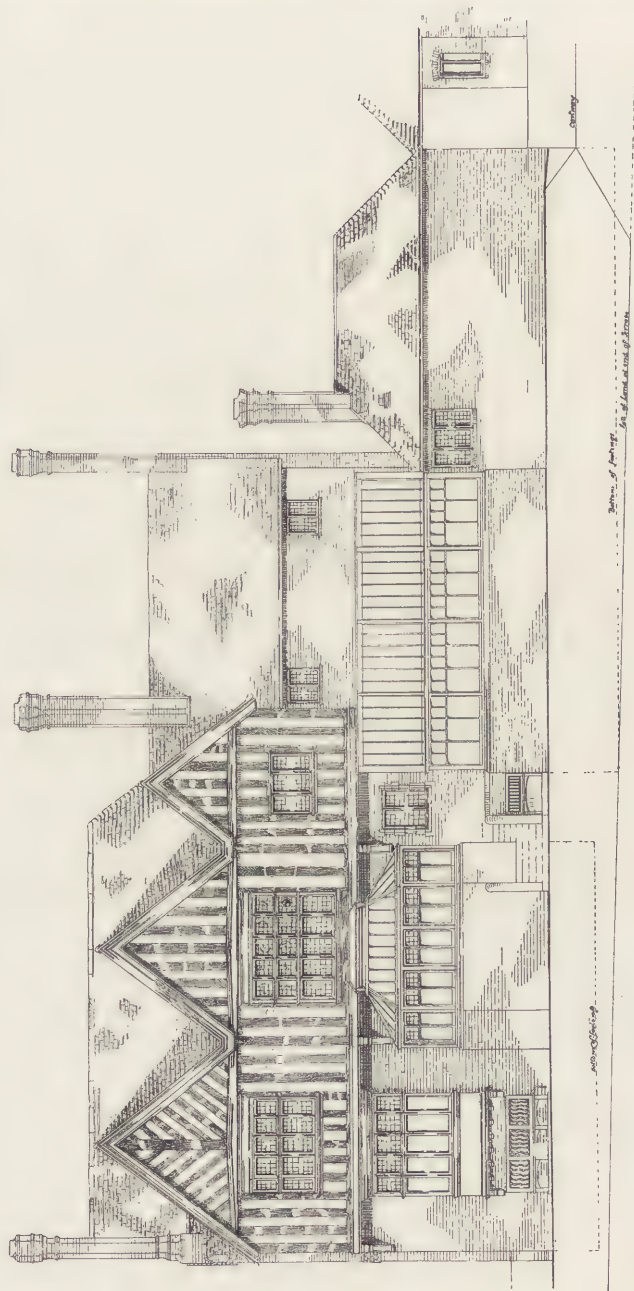


Edgbaston.

HALL—THE CEDARS.

Pateman & Bateman, Architects.

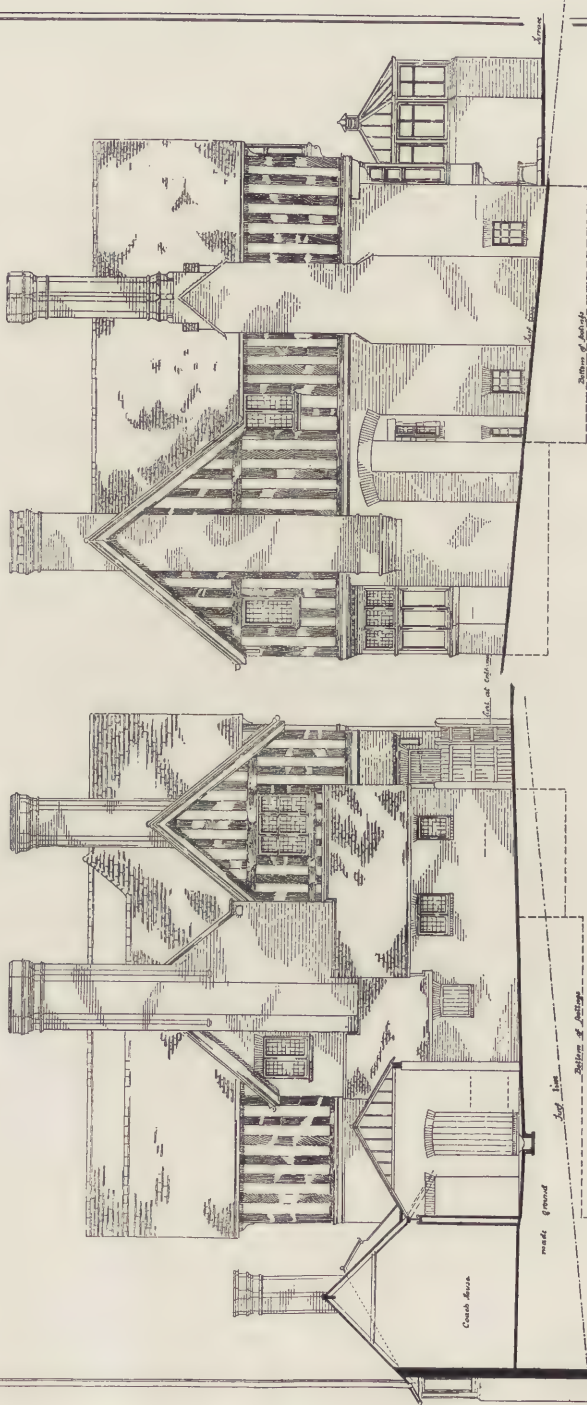
— "THE CEDARS" CALTHORPE ROAD. —



— BACK ELEVATION —

*Salmon & Salmon
Architects
London W.C.*

— "THE CEDARS" CALTHORPE ROAD —

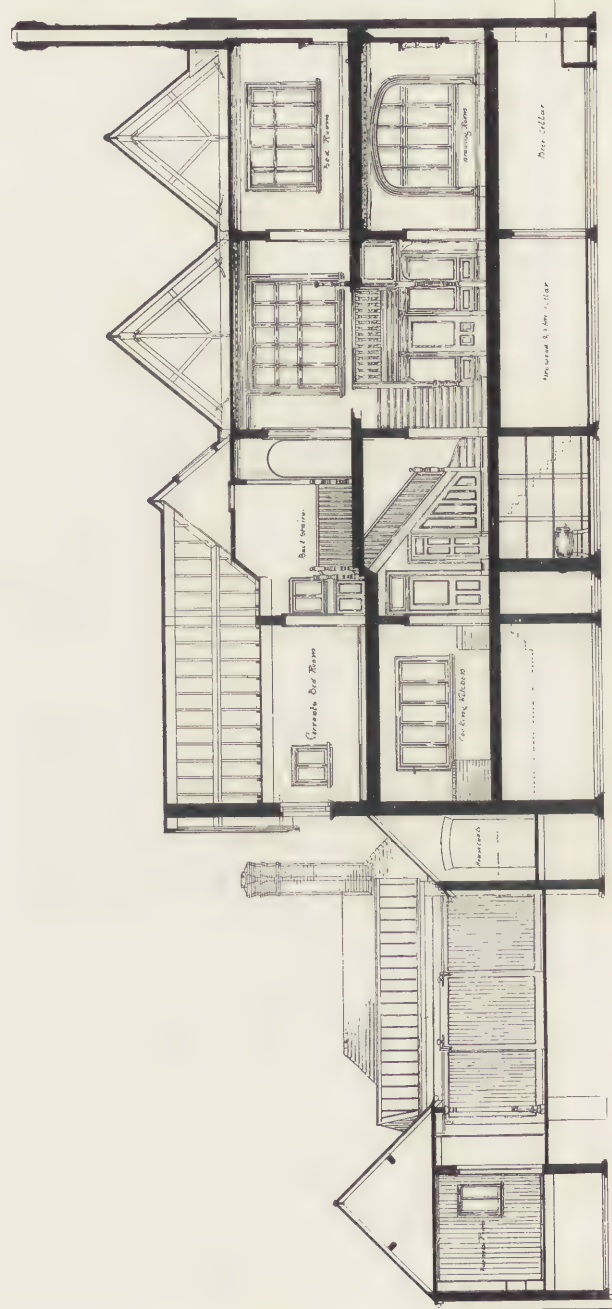


— SIDE ELEVATION —

— ELEVATION TO STABLE YARD —

*Baldwin & Baldwin
Architects
London 1888*

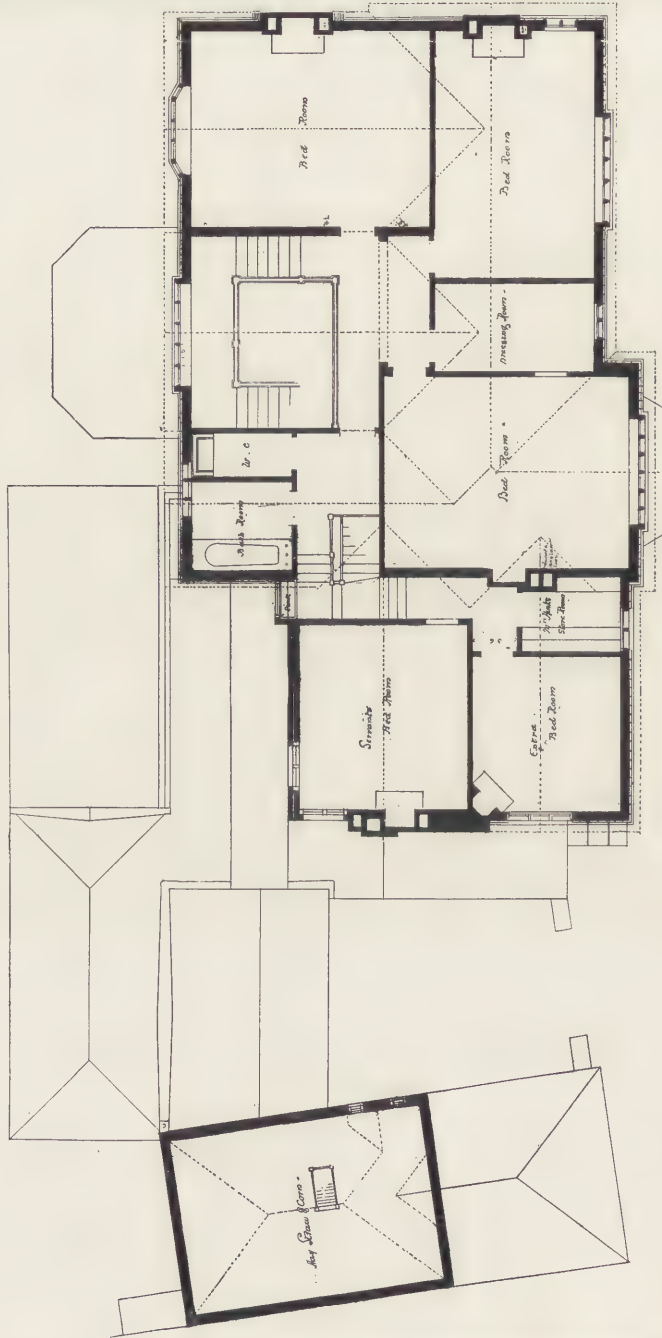
— THE CEDARS CALTHORPE ROAD —



— LONGITUDINAL SECTION —

Architect: J. H. ...
 Date: ...

— "THE CEDARS" CALTHORPE ROAD. —



— CHANGE PLAN —

*Between Redman
Apples to
1887/1888.*

CITY APARTMENT HOUSES IN PARIS.

I.

BEFORE beginning a description of French apartment houses as they exist in Paris, I will try to give a short account of the tendencies which are to be noticed in our present French architecture, and the principles which govern the construction of these houses.

The starting point of these tendencies consists in a greater strain to comply with the needs of modern life. As those needs are unceasingly transformed in proportion with the expansion of civilization, and as the progress of science affords us, every day, new means to realize new desiderata, it is plain that the architect whose aim should be to translate into his plans, by the simplest ways, the tastes and habits of his client, is forced to produce a new and original work.

It is difficult for young foreigners who come to study architecture at the *École des Beaux Arts* of Paris to notice that movement of ideas which prevails among settled architects, and if I insist upon it, in the beginning of this article, it is because I wish to modify the judgment that American architects, having passed a few years at the "*École des Beaux Arts*," may bring back home about our contemporary art.

Those ideas, in fact, are not those of the school. It is not even to be desired that those ideas should be brought into our school of art, for what is to be learned there, before all, is classical traditions, and an excessive attention to economy and practice would tend to destroy spontaneousness and imagination in the mind of beginners.

So, the school, as it is organized, does not give and does not seek to give to architects all the knowledge they ought to get.

The classical luggage it gives them is only destined to prevent their committing taste aberrations and to set for them a starting point for the searches they may undertake afterward.

It is therefore advisable for one who

leaves the school to enter the office of an architect, and there he will learn how classical theories may be put into the service of originality, and instead of fettering the imagination, regulate and allow it to create works to which every one is obliged to do homage. Among works of this kind I can give as examples: the new Faculty of Sciences at the Sorbonne, the Shore House for Posts and Telegraphs, the Buffou's and Racine's Lyceums, etc. All those structures have been built by *Prix de Rome* men, and, nevertheless, no recollection of antiquity is to be found in them, except a perfect harmony of lines and a remarkable accuracy in the composition.

The right thing is always put in the right place. Unuseful ornament cannot be found in those buildings; and all the decorative aspect is produced by a good proportion of lines and a judicious employment of materials.

I will confine myself, for the present, in the study of apartment houses. If that sort of buildings seem to offer a slighter share of artistic interest than the others, it is because those buildings, constructed with a view to speculation, are too often placed in the hands of builders without passing through the hands of architects. It is undeniable that the needs of a city apartment house may have an artistic expression as well as those of any other buildings. But here the difficulty is increased by the superposition of uniform stories, by the dissymmetry of windows, municipal regulations, etc.

In order to reach a good solution of these difficulties it is necessary for one to consider the artist, and if the public complains that our streets are often monotonous and dull it ought to recall that, besides builders who construct, there are men who show how to build, and that, if routine and common construction are to be avoided, the first thing should be to apply to those men whose being is scarcely known, and who are called architects.

Certainly, it is not easy to build a five or six-story house according to the traditions that Greek and Roman left us, or, with still more reason, to build a fourteen or fifteen-story one in compliance with the same principles. But are we obliged to always remember what Greek and Roman have done?

As I was reading, a few weeks ago, in a very interesting article published in this magazine, and what can never be too much repeated, classical studies are necessary to architects to keep imagination in the bounds of good sense. Tradition is a fly-wheel which orders and regulates flights and freaks of fancy. The examples it bequeathes us being fruit of the reasoning of many generations ought to be consulted respectfully, that is true, but judiciously, too; and the characteristic of a good and intelligent artistical training is to teach as much to reproduce the magnificent lines of old monuments as to catch the correlativeness that links the original idea with the expression developed.

Unfortunately, classical studies do not lead always to a judicious employment of architectural forms, and Vitruvius would rightly wonder, should he happen to know how we avail ourselves of the five orders the rules of which he taught us. He would probably regret that we so well learnt his teaching, without seeking to dive into the spirit of it.

Let us take care, however, not to ascribe to classical studies errors which only come from our ignorance, and far from despising them, let us try to investigate them better and to avail ourselves of what there is good in them.

The teaching of l'Ecole des Beaux Arts of Paris for too many years seemed to be content with a servile imitation of the ancients. This arose from the fact that antiquity, and chiefly Greece, was studied at the time by learned archæologists with a precision and a method of criticism unknown up to that day. The French schools of Athens and Rome, the Villa Medici, published every year marvellous discoveries and restorations, and minds were naturally smitten with their beauties, and architects were urged to put in their structures the forms which

enjoyed such favor. The memory of Titus and Caracalla's *Thermæ*, the Pantheon of Rome, the Cæsars' palace, the monuments of Greece, such as the Erechtheion, etc., pursued our architects when launched into business. So they were urged to put the grand ideas they had brought back from Rome into their study, which caused good but pretentious plans.

Men were very happy when the antique forms did not command them to make their structures uninhabitable.

Besides, many architects tried to bring to life again the shapes in use in Greek ornament, and, under the pretence of Frenchifying them, they contrived Neo-Greek style.

These shapes, somewhat stiff and archaic, but so suitable for the Parthenon, Erechtheion and the other old temples, gave an unsatisfactory result when introduced into exuberant French decoration. So, seeing them among *rinçaux*, cartouches, horns of plenty, etc., one feels an odd sensation, like that which the Venus of Milo would produce if dressed in the French fashion.

The enthusiasm and infatuation for antiquity had the effect of letting loose against the school the strong reaction at the head of which was Viollet le Duc. That reaction did not entirely succeed at that time; it moved all the artistic corporations, but was finally baffled by the resistance of the Institute.

Besides, the strain of Viollet le Duc's school fell into the opposite excess; instead of the imitation of antiquity it substituted that of mediæval architecture, which was still more out of our present habits than was the former.

In our own days, faith in antiquity is not so exclusive, and the classical training which is given in the Ecole des Beaux Arts is understood in a much broader way, as may be attested by these words pronounced by Professor Gaudet in his opening lecture for the course of the Theory of Architecture:

"Classic," he said, "is all that deserves to be considered as such, without any acceptance of time, clime nor school. Classic cannot be decreed; it thrusts itself. One may simply state and record it. Classic is all that stands victorious in the ceaseless strife of arts; all that stands

holder of admiration universally proclaimed. And it asserts through a numberless variety of shapes and combinations the unalterable principles, reason, logic and method. The Classic, therefore, is the privilege of no time, no land, no school. Dante and Virgil, Shakespeare or Sophocle are all Classic; . . . and for us so is the Parthenon, the Thermæ and Amphitheatres, Saint Sophia or Notre Dame, Saint Ouen and Saint Peter's, Farnese Palace and Le Louvre."

A considerable tendency has been shown, besides, during these twenty last years among young architects to get out of what they call the "*style Pompi r*," and seek a right expression of modern life.

That tendency which is plainly manifested in the glaringly characteristic monuments, such as industrial and school buildings, libraries, etc., is equally successfully expressed in private houses where the owner's and architect's fancy give rise to original and unique combinations.

To find a proof of this it is sufficient for one to go through the new quarters of Paris.

This tendency is not so well expressed in apartment houses which being built for general tenants ought to suit everybody, and consequently want character. But as these houses are destined for the mass, one may find there the general features and in some degree the synthesis of our actual way of conceiving the plans for habitations.

And, in fact, the examples we have taken of houses built on irregular lots, by different architects, seem composed according to one principle.

Architects have striven, for a score of years, to get rid of the fetters of old prejudices, and to give up, as much as possible, pilasters, frontons, with their ready-made forms. They also have striven to do away with the luggage of Greek ornament. They consider it an interesting document for the study of arch ology, but they put it aside as such, as they know that decorative painting and sculpture have no interest, if one does not feel for the artist, or if one has no sympathy for nature.

Moreover, to come to the logical way of thinking, it is only necessary to go back to the traditions of the old French school, which unfortunately

was interrupted by the Revolution of 1793 and the long period of wars that followed, and which seems to have been forgotten and scorned for nearly this whole century.

I do not mean that I praise without any reserve all that was built in the last century. The structures of that time have a character of nobility and discreet elegance which make them most interesting bits to study. But our forefathers often sacrificed many details of inside arrangements to the symmetry of fa ades.

The study of American and English architecture introduced, in our way of thinking, a little more simpleness. The idea and search of comfort, such as it is understood in those countries, obliged us to get rid of the stiffness of our plans. What is for us French architects one of the main charms of American country houses is that we never feel in their composition any care from the artist to confine himself in the bounds of an appointed style. His only preoccupation seems to be the satisfaction of the habits and tastes of those who are going to live there. This gives rise to a most instructive originality and liberty.

Medi val architecture in France was conceived upon these principles, and in our days the example of American builders who, applying them, often succeed in erecting most interesting houses, confirms our thinking that there is nothing to look for in architecture but a right expression of modern life. And if we allow classical ideas to interfere with our studies, it is not to draw in the fashion of old palaces, but to guide our taste in the study of details.

Therefore, the present tendency of French architecture, which has its obvious effect in our way of conceiving of city apartment houses, seems to be to go back to old French traditions. Simplicity in execution, sobriety in ornament, similar to the style of Louis XVI., but with a greater liberty and a slighter search after symmetry, similar to medi val architecture.

These principles appear in the composition of the houses built in the new quarters of Paris. I mean in the

houses built by architects, which are unhappily in the minority.

II.

Let us see, now, by a few examples how these ideas are realized. The examples I will cite are taken from houses recently built in Paris by some of the best known architects, and none of these houses has been reproduced in any magazine, until this time, neither in France nor abroad.

At the first sight we may see that all the plans are composed according to the following method: The part of the building situated along the street is double; it is to say that, in the sense of breadth, there are two series of apartments separated from each other by a gallery. Parlors and the main chambers are on the street, dining-hall, secondary apartments and bedrooms are on the yard. Kitchen and offices are often situated at the end of the apartment, in order to avoid disagreeable odors.

As for interior decoration, great originality is not to be sought for in apartment houses; for the necessity of economy obliges the architect to be content with mouldings and ornaments easy to find in trade. These ornaments are generally staff decorations similar to those of the style of Louis XV., which are simply nailed up along the walls. All these materials are of good quality and copied from good historical examples.

As the construction is nearly the same in each of these houses, I will take one of them as a type. I will analyze it, and afterwards it will be sufficient to give a short account of the particularities that may be found in the others.

I will take as a type of the apartment house in Paris a building erected in Rue du Luxembourg.

This well known street runs along the beautiful garden which gave it its name. Houses, built on one side of the street only, enjoy the view of the garden that gives them a boundless horizon of green, air and light, and gets for the inmates a delusion of being in the country. That street then is

much sought for, and apartments are high-priced and comfortable there. That quarter is, however, nearly unknown and somewhat despised by foreigners, who prefer that of Champs Elysées and Bois de Boulogne. It is not the quarter of pleasure, but that of study. As it is not far from the "*Quartier latin*," being only separated from it by the Luxembourg garden, that street is chiefly sought for by the high personages of the University and men of study. Learned men members of the "*Institute*," are to be found there. It is a very good place for study besides, for the left shore of the Seine is much less noisy than the right one.

The house we describe is inhabited, among others, by M. the Rector of the Academy of Paris and by the architect of the new Sorbonne, who conceived the plans of the house. The ground, nearly rectangular, has been very ingeniously improved, and one is right in saying that no room has been lost there.

The whole of the ground belongs to two owners who settled to have a common yard to get as much air and light as possible. So both buildings appear like a single one, though they are plainly separated from each other. In order not to settle an obligation upon one of the estates, two coachways and two door-keepers' apartments have been made. Both houses may then, at will, make one or two, according as the owners agree, as it is the case now. At all events, coachways have been disposed in order that on a day of reception carriages may enter by one gate and go out by the other. What makes the service a good deal easier, the yard itself is divided in two parts by a small railing, sixty centimeters high, which can be opened to make way for carriages.

The apartments situated on Rue du Luxembourg, and enjoying the beautiful view we have spoken of, are larger and more costly than the ones on Rue Madame. They are designed for the wealthier part of the middle classes; for the one that likes comfortable life, but without fuss and display. These apartments do not require a great number of ser

vants. One *valet de chambre*, one or two waiting-maids and a cook are generally sufficient for the service of the inmates.

The reception apartments are on the street; dining-rooms, chambers and kitchens on the yard. The four kitchens of each story are grouped in the middle of the estate, as far as possible from the apartments, so that they occasion neither smell nor noise. They are connected with a service staircase and a dumb-waiter.

The gallery, situated in the center of the reception apartments, is quite the fashion now in Paris, and one finds few houses built without this supplementary hall. It is very agreeable in fact. Pictures, vases, sculptures and general objects of art are put there. It connects parlors, dining-room and chambers. The difficulty is to give it enough air and light.

In the house we describe the gallery is lighted by two small yards, one on each end, and the doors which open on it are glassed. These doors, two meters and a-half wide, make a very nice motive of decoration.

The apartments on Rue du Luxembourg are served by elevators which seem to me to have reached the last perfection, and I hardly conceive how they could be better. These elevators being designed for a small number of tenants, are not to be directed by a conductor; and, as they are to be handled by impractical folks, they are very easily moved and offer complete security.

This double result is obtained by directing a hydraulic elevator with electricity. Hydraulic elevators, with a compensator, have, in fact, the advantage of being absolutely secure, for at every movement of its course the elevator, being poised by the compensator, forms a hydraulic balance. Besides, to handle it more easily, the engineer, M. Pifre, had the idea of adding electric buttons by which every movement can be arranged. For that purpose a very slight current is required. An electro-moving strength of two volts and a current of one-tenth ampère are quite sufficient. The handling is done by means of two buttons; one bearing

the inscription *ascent* and the other *descent*. If you press the button *ascent*, and you let it go immediately, the elevator begins to ascend very slowly. If you lengthen the pressure the speed increases until its maximum is reached. If you wish to go to a certain story, you simply draw a small register bearing the number required, and press the button *ascent*. All these movements are done with an extraordinary readiness and facility.

The apartments are warmed by hot air apparatus. The low-pressure steam system which is so much used in America has not been much employed in France until lately. It is still considered too expensive, and reserved for public buildings. By way of exception, however, it is to be found in a few important houses.

In these houses radiators are scarcely employed (I mean visible radiators). However elegant they may be, they are nothing but stoves, and stoves which are always obstructive are very seldom an ornament.

So architects preferred to put in cellars, or in concealed places, steam pipes covered with radiating surfaces. The fresh air is warmed along these pipes, then it is conducted to the apartments by means of pipes laid in the thickness of the walls.

The building we are talking about, though bringing rather heavy rents, since the main apartments are leased for ten thousand francs a year, is built with unpretending materials and sparing decoration; so the construction of it was not very expensive. The whole ground occupies a surface of 1,396 square meters. Of this, the yards occupy 229 square meters, and building 1,167 square meters. The building is five stories high, without reckoning cellars and attic. The total cost of the construction did not overpass the amount of 1,100,000 francs, and was distributed as follows:

Masonry,	410,000 francs
Carpentry,	156,000 "
Covering and leadwork,	65,000 "
Marble-cutting,	15,800 "
Painting,	96,000 "
Chimney building,	30,000 "
Sculpture,	12,000 "
Interior decoration,	12,000 "

Ironwork,	145,000 francs
Elevators,	30,000 "
Heating apparatus,	35,000 "
Woodwork,	30,000 "

Total, 1,036,800 francs

This table gives a right idea of the charges for any current building in Paris. But it is to be noticed that party walls existed before the construction, and have only been raised in some places. Foundations are settled on trenches fifty centimeters deep, filled with concrete. In the cellars walls are made with "Meulière stone." This stone is composed of quartz and limestone. It is yellow-colored and full of holes, which prevent its being used up as freestone. It makes excellent ashlar, and with addition of cement or hydraulical lime, it makes free monoliths.

That stone, which is to be found abundantly in the neighborhood of Paris, is much employed for every kind of construction. And though it presents the inconvenience of darkening in time, there are even many nice examples of the employment of it in the construction of suburban villas.

To come back to our description, free-stone has been used for façades on every side, even on the yard; brick for inside walls, and plaster flags for partitioning.

Floors are constructed with double T iron beams. Above the cellars those beams are connected together by small brick arches called "voutains," to secure apartments from humidity. In the other stories deafening is simply made of rubbish ("plâtras").

The drainage is supplied by a big sandstone pipe which runs along the walls in the cellars, and pours waters and drainage in the main sewer on Rue du Luxembourg by means of two private sewers, one for each of the owners.

The pipes have been put in the cellars in order to be easily visited and restored in case of damage.

There is now a building constructed in the center of Paris for "Le Nord's" Company, near les Grands Boulevards, between Le Pelletier and Chauchat streets. The offices of the company

are settled on the ground floor, and occupy a part of the yard which is covered with glass. The stories have been let for habitation.

The main apartment on Rue Le Pelletier is very agreeable. The glazed doors on the gallery are broad, and spread light and cheerfulness in the whole apartment. The bow windows on the façade are also an element of space and comfort. It may be observed that the architect has much employed round shapes in the composition of his plan, especially in the staircases, which allows him to obtain more room. Although the square staircase is preferable to the circular one, in point of view of monumentality, it is better to sacrifice the decorative side of the staircase in order to get greater space for the apartments.

On Rue Le Pelletier main apartments are to be let for about 14,000 francs, and those on Rue Chauchat for 10,000 francs.

The plan of the estate built on Boulevard Malesherbes is interesting for its originality. The protuberance which is found in the yard is an ingenious way for getting five similar apartments facing the Boulevard. It may be seen on the plan that there are eight apartments on each story, which thus, utilizing that locality, causes a good investment. A careful examination of the plan will show many ingenious methods of getting more place and room. Each apartment is served by an elevator. The most high-priced apartments are to be let for six or seven thousand francs.

This estate, built by an insurance company, is situated in a quarter remote from the center of Paris, near the end of Boulevard Malesherbes. Apartments are to be let in that part of the city for much lower prices than in Rue Le Pelletier, for instance.

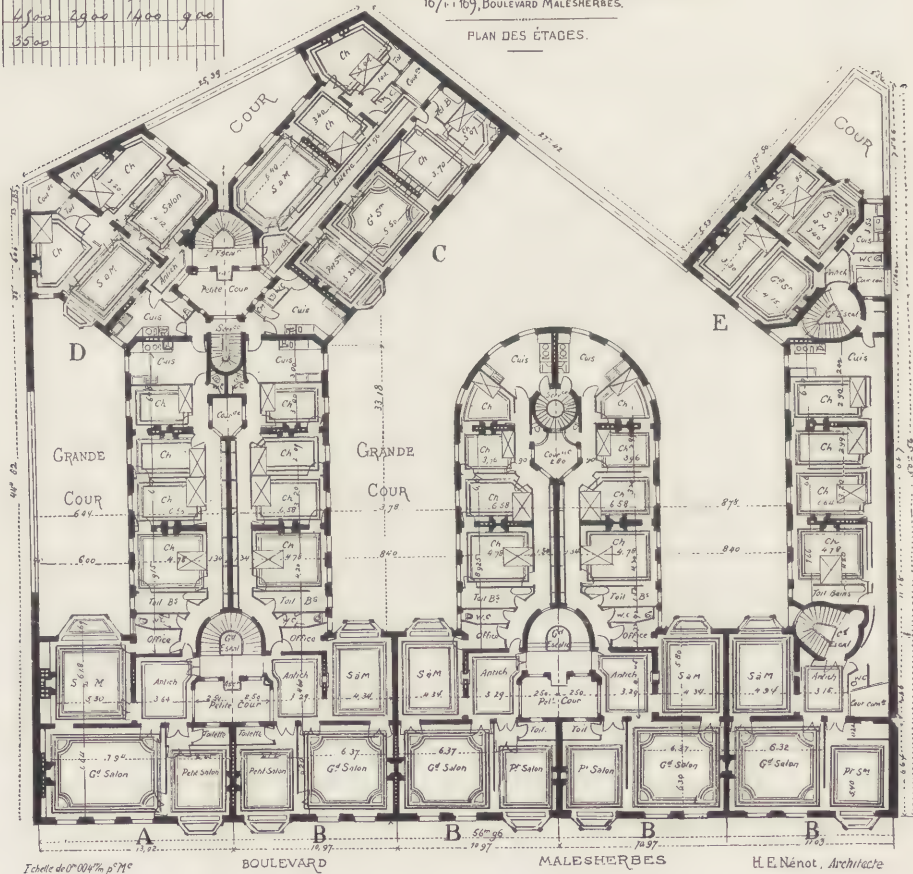
There is another attractive house built in Rue Vernet, No. 13, in the neighborhood of Les Champs Elysées and *l'Arc de Triomphe de l'Etoile*. It is quite different in style from the others. It is no more the great speculation house, the caravansary built for a considerable number of tenants. Here the smallness of the ground does not

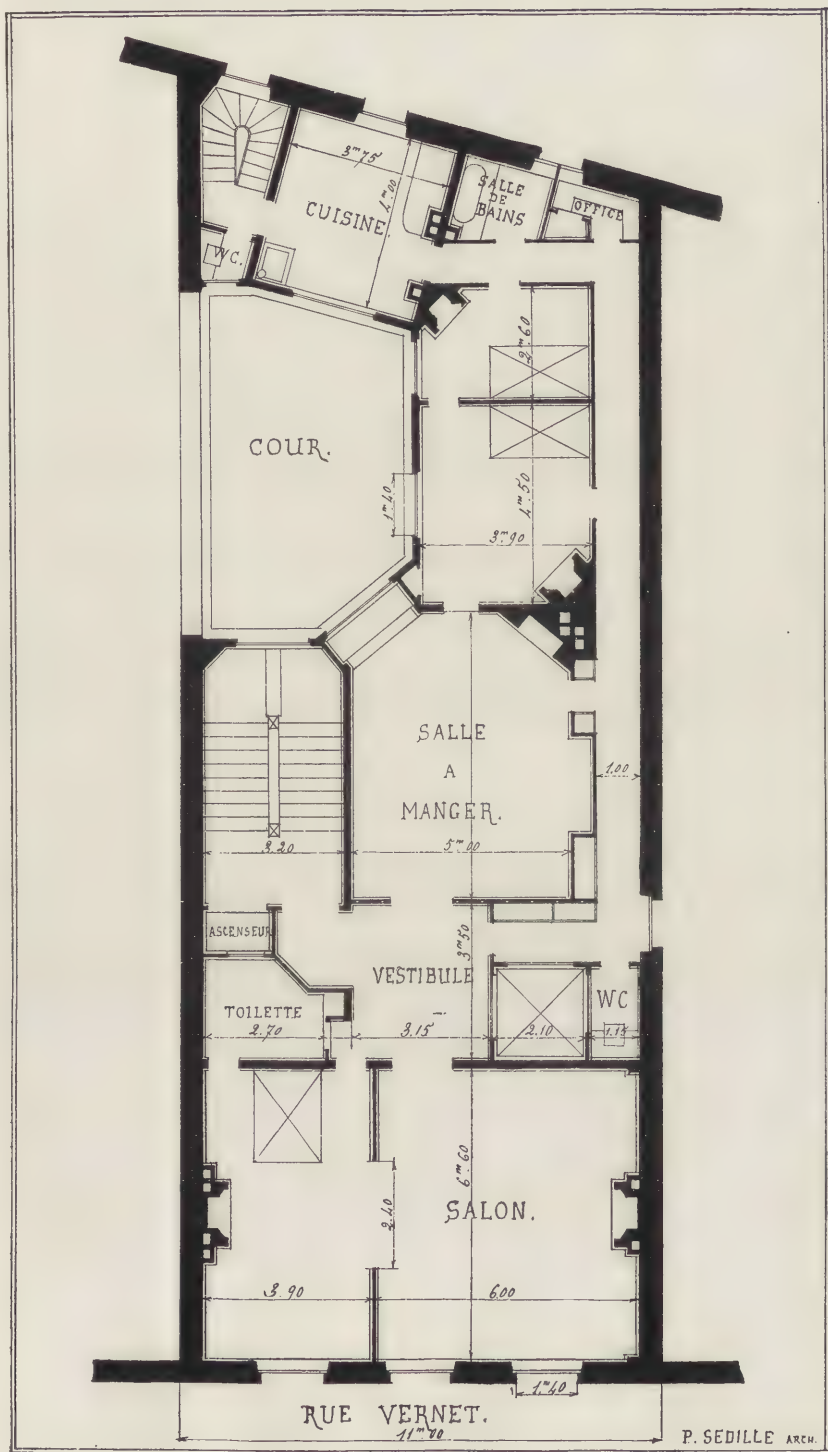
B	C	D	E
11000 10000 1000 1000 1000	2400	1200	1200
2500	3500	1600	1300
6500	3900	1800	1400
5500	3500	1600	1300
5000	3800	1900	1100
6500	2900	1400	900
3500			

5% à ajouter à ces prix
pour le chauffage, l'éclairage
l'eau des ascenseurs et téléphone
au concierge etc

PROPRIÉTÉ DE LA UNION ET PHÉNIX ESPAGNOL
167-169, BOULEVARD MALESHERBES.

PLAN DES ÉTAGES.







BOULEVARD SAINT GERMAIN, NO. 250.

M. Dainville, Architect.

allow more than one rather small apartment on each story.

The hotel in juxtaposition, which was built by the same architect, M. Paul Sédille, and which may be considered as a very good example of modern architecture, is inhabited by the owner of both. The style of the house, though being not so rich as that of the hotel, is still of an elegant and distinguished kind, which prevents its being uninteresting.

The façade is very modern though very classic. Classic because of its good proportions and the harmony of the *ensemble*; modern by the study and the choice of materials. The entrance-door, for instance, deserves being specially mentioned. It is framed with a mosaic decoration on a golden ground. In a manner of a key-stone a gracious head of a woman by the sculptor Allar is to be found in the style of the delicate and lively heads of the Renaissance.

Let us say, by the way, that in this century of economic construction it is a

lost tradition to get decorative sculptures done on houses by known artists. It is very seldom we see on a modern façade those pretty heads and masks full of expression, so many of which we see on the façades of the buildings of the seventeenth and eighteenth centuries. It is by those details that life may be given to stone, and the coldness of modern architecture may be broken.

To remark, also, in this house, the decoration of the entrance hall: In order to avoid mural paintings which are easily soiled and to avoid the cold aspect of bare stone, the architect used very thin marble slabs, which may be found for a low price in trade, to cover the walls. He used no mouldings and relief, which would have increased the cost price. All the decorative aspect is got by frames of different color, and the aspect is very satisfying without involving an extra expense. On the yard there is an iron wall with brick filling—an economic construction which has still the advan-



RUE VERNET, NO. 13.

M. Sedille, Architect.

tage of giving much room on account of its thinness.

With the building on Boulevard Saint Germain, No. 250, constructed by M. Dainville for "La Nationale" Insurance Company, we fall again into the great speculation house. But this one seems to us particularly interesting on account of the monumental appearance of the façade and the good combination of the plan. The illustration is not, unhappily, sufficient to give the impression one feels before that building, which, by the dignity and the simplicity of its composition, has a share in the decoration of the Boulevard as much as a public structure.

French traditions of the eighteenth century may be found in that architecture. It is to say, fine proportions and logic in the composition. The good effect produced by that building does not come from the exuberance of the decorations, but from the satisfaction one feels seeing utility expressed by simple ways without breaking the unity of the composition. We ought to point out an obligation which influenced the composition of the plan. It is the prohibition to construct on the party walls along de Grammont's and Pozzo di Borgo's properties, and the necessity of leaving an appointed space between the new constructions and those walls. That occasions a considerable loss of space in the apartment on the left side of the plan.

This building, constructed in one of the richest quarters of Paris, beside the offices of the Ministers of Public Works, and at a short distance from the "Chambre des Députés," is destined for a rich class of tenants. So, apartments on the first floor are to be let, one for 17,000 francs, the other for 14,000 francs. We give a reproduction of the gate of the entrance door.

By these few examples an idea may be given of what a modern apartment is in Paris. It is necessary to add that elements of comfort, such as hot water in dressing closets, etc., begin to be more and more in use, and in all the apartments I have cited improvements of that kind may be noticed.

It may be observed, too, that the

question of ventilation and arrangement is considered as a leading one.

Each new building has elevators and dumb-waiters.

As the municipal regulations forbid the construction of buildings more than twenty meters high, measured on the front wall, water pressure is sufficient to get hydraulical elevators. So this system is the most in use in Paris.

When a lodger wishes to settle himself in a house he signs a three years' lease, renewable every three years.

The owner is obliged to keep the apartment in good condition and to make all the repairs except those which the tenant is obliged by law to make.

During occupation, if the apartment needs important repairs, the tenant is obliged to allow them to be done, whatever inconvenience may be afforded to him, and even though he be forced to vacate his apartment for a time (Code Civil Art., 1724). But if the repairs last more than forty days the cost of the lease will be diminished in proportion with the time and with the part of the apartment he has been bereft of. If the repairs are of such a kind that they make the lodging uninhabitable, the lodger will have a right to get the lease cancelled.

The lodger is bound to observe two main obligations: 1. To use the apartment according to the purpose expressed in the lease. 2. To pay the rent at appointed time. According to the contract the lodger is to give back the apartment as he received it. Damages brought about by age or external accidents are exempted.

If an official examination of the premises has not been made the lodger is thought to have received them in a good condition, and must return them as such unless he has proofs to the contrary. The lodger is accountable for fire, unless he proves that fire occurred by chance, or by reason of accident. But the new apartments in Paris are practically fireproof.

The tenant has the right to re-decorate the interior apartments, providing that at the end of the lease he again leaves the apartment as he received it. The lease is not cancelled either by the owner's or the tenant's death.





ENTRANCE—BOULEVARD SAINT GERMAIN, NO. 250.

Over and above the cost of the lease the tenant has a share in the payment of taxes attached to the estate. These taxes add about seven per cent to the rent.

The owner has to keep the building in good repair, and the exterior of the house clean. The façade of each house in Paris has to be cleaned every tenth year, and as the city is divided into twenty *arrondissements*,

two *arrondissements* are submitted to a general cleaning every year.

The *concierge*, or door-keeper, is a sort of a manager. He maintains order in the house, receives the rents and tells the owner all about what is done in the house.

Nearly all the houses we have spoken of and, generally speaking, every great house in Paris, has stables which are kept by some of the tenants.

Maurice Saglio.





WEST FRONT OF AIX CATHEDRAL



Echelle de 0.02 pour metre.

5. metres

Elevation and Plan of the West Arcade, the Cloister, Aix Cathedral.

FRENCH CATHEDRALS.

Part VI.*

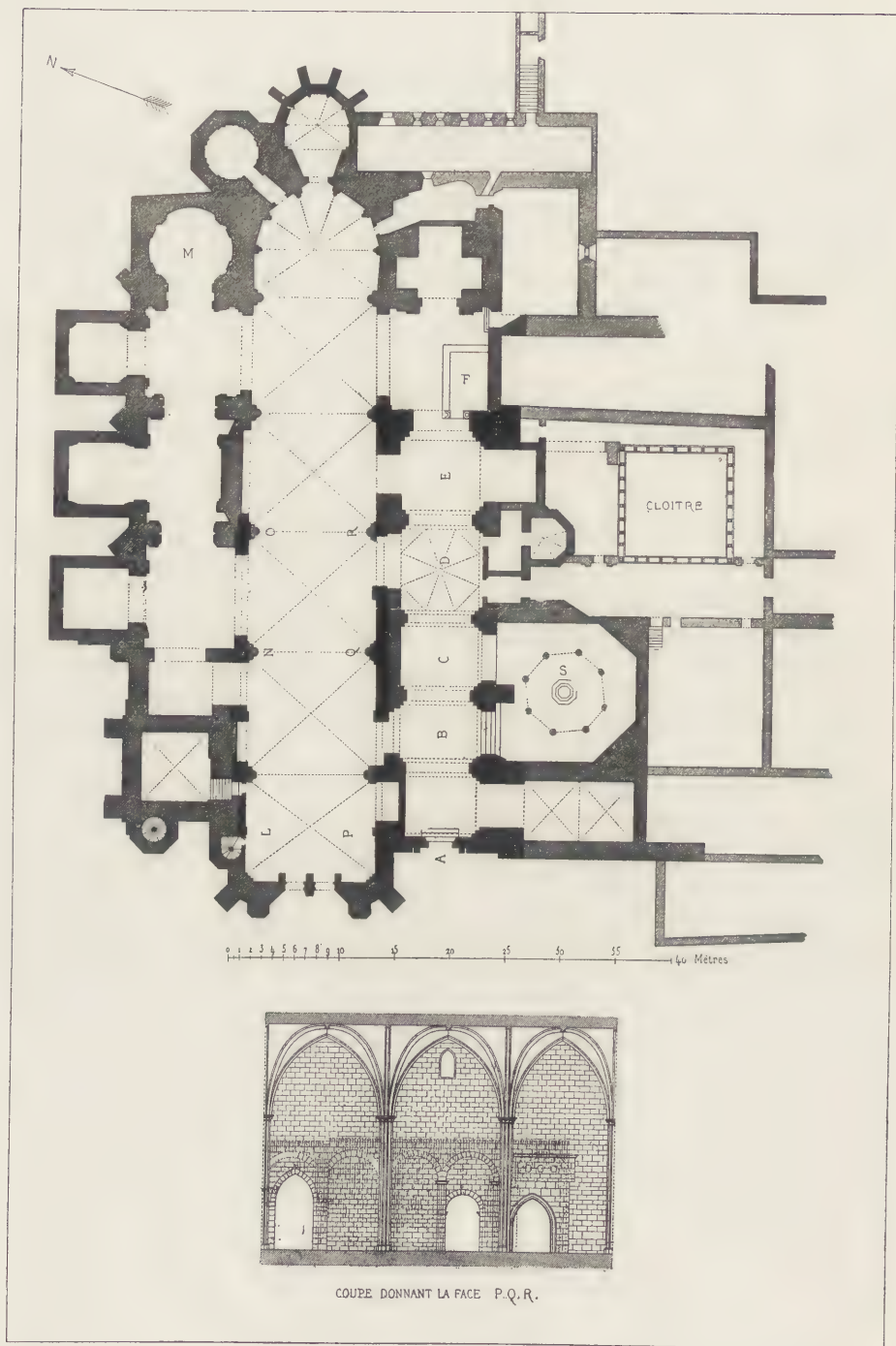
THE CATHEDRALS OF PROVENCE. II.

THE cathedral of S. Sauveur (Transfiguration du S. Sauveur), at Aix-en-Provence, is one of the most interesting of Provençal churches. As is often the case, it is a mixture of styles and epochs, but varied as are its chief parts, they are so sharply divided that the blending of the work of different centuries is not so unpleasant as it often is elsewhere. The cathedral, with its south aisle of the eleventh century, its nave of the thirteenth to sixteenth, and its north aisle of the same time, greatly modified in the seventeenth and eighteenth centuries, is one of the largest churches of Provence; while the cathedral group, the church, the baptistery, the cloister, forms one of the most complete and interesting ensembles in the south, and to which the archiepiscopal palace of the seventeenth century might be added. Not all of the parts of this group are of equal interest. The Gothic

portions are not notable. The baptistery was remade in the sixteenth century, though without complete loss of character. But the south aisle, which formed the primitive cathedral, and the cloister, though much injured by time, are fine specimens of Provençal Romanesque. The cloister is comparatively well known; the other portions, though but little studied by English-speaking students, have been the object of careful and loving study by an accomplished group of archæologists living under their shadow.

In Roman times Aix was a flourishing and prosperous city. According to the legend, S. Maximin, who came into Provence with the Maries and other companions and relatives of Our Lord, built an oratory close by the temple of Apollo, and which in one form or another is said to have survived until 1808. It was, doubtless, a rude and unimportant building, and on this ac-

* For introductory and historical papers see THE ARCHITECTURAL RECORD, Vol. II., Nos. 2 and 3; Vol. III Nos. 1 and 4; Vol. V., No. 3.



PLAN OF THE CATHEDRAL OF AIX.*

*This plan, which is copied from M. Révoil, is not quite complete. It does not indicate the steps leading to the first chapel on the right; the vaulting is omitted in the north aisles, as well as the domes in the chapels on that side. The location of the choir and altars is not shown. The dating of M. Révoil, shown by the black portions, is not followed in this study, as stated in the text; it is, however, correct in indicating the oldest parts.

count is claimed to have survived the pillage of Aix by the Saracens, who destroyed the city utterly, save for the towers of the ancient palace, and a part of the wall of the temple, which immediately adjoins the entrance wall of the south aisle of the cathedral.

A few authentic dates in the early history of the cathedral have been preserved. In 1060 Archbishop Rostang d'Hyères issued a pastoral letter to his flock, urging them to unite in the building of a new church. In 1103 the cathedral was dedicated, and in a charter issued at this time "it was resolved to consecrate the church of S. Sauveur, recently founded between two churches, to wit, to the north the church of Notre Dame, and to the south the church of S. Jean Baptiste, the Oratory of Our Lord Our Saviour being built to the east." Of these churches only one, that of S. Jean, is known with absolute certainty, being the baptistery. The question of the location of the church of Notre Dame has been argued time and again, and the edifice is supposed by M. Révoil to have filled the site of the present chapel of Notre Dame d'Espérance, at the east end of the north aisle, though there is nothing to support this opinion save the fact that this is an easy solution of the problem. On the other hand, it has been contended that it was the church represented by the fragments now encased in the walls of the central nave, whose elementary mouldings appear to be of an earlier date than those of the south aisle. The chief objection to this theory is the unusual width of the nave, though if it really be Carolingian it was not, of course, covered with a vault. The Oratory of Our Saviour was between the two, and to the east. There is no reason to doubt its traditionary situation at the head of the south nave, and the only room for rebate is, whether the oratory was within this aisle and surrounded by it, or we are to take the word to mean the whole aisle itself. This latter view has been maintained by M. Révoil, who sees in the south aisle a church of the ninth century, which is certainly nearly two centuries too early.

The south aisle or nave of the cathedral is a church complete in itself, and has all the characteristics of a Provençal church of the eleventh century. It is a rectangle of five bays, of which the fourth has an octagonal dome, and the others are covered by pointed tunnel vaults. Its architectural characteristics are almost identical with those of the cathedral of Avignon. In both are pointed tunnel vaults, carried on plain double arches, with rectangular piers, whose outer parts are cut away for a column, with capitals of the Corinthian type considerably modified and changed. In both a carved band is carried at the base of the vault, while each bay has double round wall arches with small hood moulds. In nothing, save in the detail of the capitals of the longitudinal arches—one of which shows a man stretched out, his head serving as the corner—is there anything different from what may be seen in the cathedral of Avignon. The dome bay is simpler, being surrounded by four plain single round arches, with small pendentives in the corners of the square, with the symbols of the Evangelists in their bases. A carved string forms the base of the octagon, which is covered by a dome with ribs, treated as pilasters, in the centre of each face and a small opening in the centre, a system identical with that of the dome under the western tower of the cathedral of Avignon.

This structure now forms the south aisle of the cathedral, the Gothic building having been added to it on the north and east. It is, as has been said, a complete church in itself, since in no Provençal church of this type do we find a dome save as forming part of the choir and preceding the apse. It is true, the presbyterium, or fifth bay, is a novel feature, but this does not affect the fact that this nave was a complete church in its origin, and could not have been a part of another edifice. It is easy to see, therefore, that we have here the church dedicated in 1103, for the forty odd years which separate this dedication from that of the cathedral of Avignon is not too great, notwithstanding the identity in style. But in the first three bays of the adjoining



ENTRANCE TO SOUTH AISLE, AIX CATHEDRAL.

central nave are the remains of round longitudinal arches, two to each Gothic bay, which are obviously Romanesque. To what structure did they belong?

Certainly not to a three-aisled church of which the south aisle has long survived, for there are no early Provençal churches with more than one dome. In 1092 Archbishop Pierre Gaufridi issued a charter referring to the church as having been deserted and then augmented and enriched by the Prévôt Benoit, and announcing an indulgence to all who would contribute to the continuance of the work. If the remains in the central aisle are not Carolingian—and there is no evidence for or against such a proposition—it might represent some additions begun at this time, and not finished when the south aisle was dedicated in 1103. But at least it is certain that in 1205 Rostang de Noves found his cathedral insufficient for his needs, and set about building the Gothic cathedral.

The entrance portal of the south aisle (1080) is a beautiful example of the Provençal use of Roman motifs. On each side of the door is a channelled column, variously fluted. The capitals, much defaced and slightly different, are modeled after the Corinthian type, but show considerable departure from it. Above the abacus is a block, corresponding to the entablature, supporting an uncarved moulding on the right, and one with egg-and-dart and dentiles on the left. They carry a round arch, whose upper edge is ornamented with small fillets and acanthus leaves, while across the base is a built-up lintel. This portal is enclosed in a frontispiece formed by two large columns, with an entablature. The columns are manifestly from a Roman structure, since their upper fluted parts are of unequal lengths. The capitals are without the heavily carved abaci of the inner columns, but carry plain blocks as below, decorated above with a richly carved egg-and-dart and ornamented consoles, which are continued across the space between them. The remaining portions of the front are featureless. To the right is a heavy wall of large blocks of finely cut stones,

which is supposed to be a fragment of the temple of Apollo. It is lighted by some small round-headed windows, and is surmounted by a modern passage which communicates with the buildings at its right.

Heretofore I have only considered the interior of this nave as in its primitive state, without reference to the chapels which open out from it. These are not few in number, but fortunately they are so disposed as not to interfere with the aspect of the original structure, whose primitive character is clearly marked. This is greatly helped by the fact that it is connected with the central nave by two small openings only, and though now an aisle of the larger church, it is, in a measure, separate and independent.

On the south side each bay has a different feature. In the first a low segmental arch leads to a low chapel of two bays, several steps down, which was once the chapel of the Resurrection, founded by the canon Honoré de Pinchinat in 1535. It is now used as a store-room for chairs. In the next two bays pointed arches below the wall arches open into the baptistery. Though much modified and given its present form by the canon Jean de Léone in 1577, it is a structure of the greatest interest. It is an octagon with an inner series of eight superb monolithic columns of granite and green marble, with fine Corinthian capitals, said to have been taken from the temple of Apollo, and which carry small round arches. The upper part or lantern is entirely the work of M. de Léone, and consists of small decorated panels, with oval windows above and a lantern and dome. Seven altars are disposed around the passage that surrounds this centre, with paintings executed in 1847–1849, representing the Seven Sacraments. The date of this building is not known, but its materials are clearly much earlier than any part of the cathedral, the columns being certainly Roman.

In the fourth bay is an upper Gothic chamber above the passage leading to the sacristy. In the fifth bay is the chapel of the Sacré Cœur, built in 1531. It is a rectangular vaulted structure,



THE CLOISTER OF AIX CATHEDRAL.
Looking toward the Southeast.

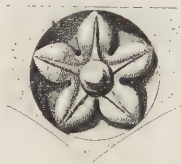
with a large flamboyant window in the south wall, filled with some good painted glass, chiefly of the sixteenth century. Opposite it, on the other side of the aisle, is a small modern chapel with two columns taken from the ancient *Sainte Chapelle* or Oratory. These are the solitary fragments of this once-venerated structure now remaining in the cathedral, though the debris of its foundations exist below the pavement.

With this bay the cathedral of the eleventh century comes to an end. The new church begins to the east of it in the most abrupt manner, the mouldings of the old and the new piers, distinct and different, meeting without attempt at juncture. The stonework of the piers and floors is continued in the same manner. The division is affected directly at the arch, the piers of the new part having bases, while those of the old are without them.

The celebrated cloister of the cathedral, though it has suffered severely with time, is one of the most interest-

ing monuments of its class in Provence. Its oldest parts date from the year 1080, and are attributed to the *Prévôt Benoît*. Nothing remains to indicate the original covering of the walks, but the arcades are in a tolerable state of preservation. On the north side they stand free, without roofing; on the other three sides they support some ugly and unimportant buildings. It is a rectangle, with eight arches on each side, resting on coupled columns whose delicate shafts, circular, polygonal or twisted, stand on a low wall or base, which runs entirely around the cloister, interrupted only on the north side by an entrance to the garden that once formed its centre.

The corners of the arcades are emphasized by piers of different design. On the northwest corner the pier is decorated with columns, bent to form a sort of X pattern. At the northeast corner is a complicated pier with columns on one side, a relief of *S. Peter* on another, and a strip of ornament on the third. The southeast pier has



DETAIL OF THE CLOISTER, AIX CATHEDRAL.
The Northwest and Southwest Angles.



DETAIL FROM THE CLOISTER, AIX CATHEDRAL.

richly panelled sides and a large square capital of acanthus leaves. The south-west pier has a columnette on each corner. Over each is a symbol of an Evangelist, fine strong figures admirably suited to the places they occupy.

The arches of the arcade have a broad inner surface towards the quadrangle, with small carved foliated disks in the spandrels. Towards the walks they are variously treated. The north arcade has an inner finish of a roll with a hollow above. In the spandrels are foliated rosettes, and at the origin of the arches are ornaments, now too much disfigured to be intelligible. Several of the capitals are ornamented with scenes in relief, much defaced. On one are the Annunciation, the Nativity and the Circumcision; another has the Adoration of the Magi and Jesus teaching in the Temple; a third has the Crucifixion, the Descent from the Cross and the Entombment. In the eastern arcade the arches have a rich zigzag ornament, with grotesques in the spandrels and a carved string above. Near the centre a mutilated statue, perhaps of the Virgin, is applied to one of the columns. The capitals are chiefly foliated. On the inner enclosing wall of this gallery have been gathered a variety of inscriptions, statues, etc., obtained in the repairs to which the cathedral has been subjected. The arches of the south arcade have a lower roll beneath a deep hollow; two of them are ornamented with flat round-ended leaves, and the disks in the spandrels have rather flat foliage. The west arcade is similar to the north, with a carved string at the springing of the vault. There are several figured capitals in this gallery, but most of them, as in the south walk, are foliated, with an abundant use of the acanthus.

As a type of a Provençal church of the eleventh century the cathedral of Aix might be dismissed at this point, for it was not until more than two hundred years after the building of the cloister that it was enlarged in such a manner that the new part completely dominated the old. The Gothic portion was begun with the building of the apse, the choir and the two arms of the transept in 1285. The work

was long delayed. In 1306 Archbishop Rostang announced an indulgence to those who would contribute to the building of his new cathedral. In 1323 the tower at the west end of the north nave was begun by Archbishop Jacques de Concos. The work dragged on more slowly. New operations were begun upon the tower in 1411, at which date the apse and the transepts were completed. Shortly after, in 1442, the little chapel of S. Mitre, behind the apse, was begun by the master workman, Pierre Cappellet, or Pierre de la Chapelle, who is the earliest recorded artisan known in connection with the cathedral. Previously the north aisle was begun by the transept and the chapel of S. Grégoire by Archbishop Armand de Narcisso, or de S. Ursisse (died. 1348). Another chapel, of the Université, flanked the tower, leaving an open space between them, which was filled by the chapel of Notre Dame, built by the architect Gabriel de Salicibus, of Lombard extraction, under the direction of Archbishop Olivier de Pennart, who consecrated it in 1470. In 1477 the first stone of the portal of the central nave was laid, and the cathedral was finally dedicated in 1534. In the north, a structure whose erection was spread over so long a period, would have been distinguished by many striking differences in style. But the Gothic of the south was less ambitious than that of the north, and a considerable uniformity prevails in the various parts. At least, it may be said that the cathedral of Aix is singularly regular, even though it is deficient in the more splendid development of the north.

The central nave, whose axis is slightly inclined, consists of five bays with an apse of seven sides. The arrangement of the choir is peculiar for a French church, and is the same as in Westminster Abbey, which, as is well known, follows the usual Spanish custom, which may be seen also in some Italian churches, as that of the Frari at Venice. The high altar is within the apse. The fifth bay of the nave serves as a crossing, large arches opening into the aisles on either side. In the fourth bay, and wholly removed



INTERIOR OF THE CATHEDRAL OF AIX, LOOKING TOWARD BAPTISTERY.

Drawn by J. de Magallon.

from the latter, is the choir, with the seats for the clergy. Its woodwork (1720) is not noteworthy, but immediately above the stalls is stretched a splendid series of tapestries, which once adorned the cathedral of S. Paul in London. The authorship of the designs, which treat of the principal mysteries of the life of Our Lord and of the Virgin, is not positively known, but competent critics attribute them to Quentin Metsys.

The five bays of the nave have pointed cross vaults, with diagonal and wall ribs, each with separate columnettes, that make a clustered pier between each bay. The most striking peculiarity of the nave is not its Gothic detail, which is quite unimportant, but the fact that throughout its greatest length it is almost entirely enclosed within solid walls, in which only a few small openings are cut to the adjoining aisles or naves. The bay just before the apse is the only one in which both the north and south arches are open clear from vaulting to floor, and here alone does the visitor receive the impression of standing in a Gothic church with aisles.

This unusual construction has resulted in giving considerable variety to the nave walls, from the introduction of chapels, arches, inscriptions and other features. Thus the first bay has, on the south side, a low chapel cut in the enormously thick wall between the two naves. Above, a singular little rectangular Gothic oriel projects into the nave, with four small irregularly placed windows. It served as a gallery for the Counts of Provence when attending mass, and formerly communicated with a tribune directly behind it in the south aisle, which was walled up in the last restorations. The next two bays have each two round arches which belong to the earlier construction, but only one is visible on the north side, the third bay being completely open to the north aisle. The nave is lighted by windows in the upper wall of the first, second and fourth bays, but is without the triforium and clearstory of the typical Gothic church.

The apse is pleasingly proportioned.

Each bay is lighted by a long, narrow window, divided by a slender columnette, all, unfortunately, now blocked up for nearly half their height. Bundles of columnettes carry the vaults, the outer pair belonging to the arches carried over the windows, while the central ones, which carry the vault, are interrupted by niches near their bases. An arcade of pointed trefoiled arches, three to each bay, is carried around the base. The whole is painted in unpretentious designs that agreeably harmonize with the painted glass of the windows, which is modern, and dates from the restoration of the sanctuary in 1860. Two small chapels, whose entrance arches form part of the arcade at the base of the apse wall, open from it. The earliest, dedicated to S. Mitre, and built by Archbishop Aymon Nicolaï, is a charming little structure of seven sides, reproducing in its general form the characteristics of the cathedral apse. Its vault is carried on columnettes in the angles, and the five central bays are lighted by windows in the upper wall. Over the altar is the tomb of S. Mitre, a fine stone sarcophagus taken from the ancient cathedral of Aix, the church of Notre Dame de la Seds, which has now entirely disappeared, though its site is marked by a modern church of the same name. Adjoining this chapel to the left is a passage that leads to the chapel of S. Jean, built in 1582. It is an octagon, with Corinthian pilasters, and is lighted by a dome.

In a sense there are no transepts in this cathedral, but the structure of the central nave is such that the side bays adjoining the fifth bay have the effect of transepts, and somewhat their value. On the south side it is a continuation of the south half. At its east end is a chapel (1739) with three rectangular arms. Its entrance is in the style of the last century, with Doric pilasters, a particularly unhappy ending to the ancient aisle before it.

The north aisle of the cathedral, now known as the nave of Notre Dame d'Espérance from the chapel at its east end, is the result, as has been said, of the building of a series of chapels of the same height and width as the bays



SECTION OF THE BAPTISTRY, AIX CATHEDRAL.

From Isabelle.

of the central nave, from which they open. Greatly injured in the religious wars of the sixteenth century, its rebuilding was continued almost throughout the following century, from 1594 to 1695, during which time it was completely modified. Internal buttresses were built between the bays, with arches decorated with monumental doorways in the classic taste of the time. The Doric order is employed in the first bay, the Ionic in the second and the Corinthian in the third. The chapels now became an aisle, though the bays are sharply cut off from each other, and small rectangular chapels—insignificant structures with low domes—were built out from the three larger ones. To the east the nave is closed by the chapel of Notre Dame d'Espérance, a circular structure with a dome carried on a drum. Its decoration with Corinthian pilasters was completed in 1697.

The façade of the central nave is the most notable external part of the cathedral, and is a charming composition of the fifteenth century. The first stone was laid by Archbishop Olivier de Pennart in 1477; it was begun by Léon Alveringena and completed by Pierre Soqueti, who began his work in 1500. The portal is a large recessed, pointed arch, with a delicate reversed outer curve that rises up before the window above. Decorated buttresses on either side form part of its decoration, and the façade is enclosed by plain diagonal buttresses on either corner. On each side of the door are statues of the Apostles, with decorated pedestals and canopies. The portal is rather shallow, containing only two of these statues on each side, the others being continued on the inner buttresses and wall of the front. Within the arch is decorated with a series of closely set cherubim heads, and an outer series of seated patriarchs under canopies.

On the central pier that divides the doorway is a statue of the Virgin and Child, a charming and delightful work which, with the sculptures in the arches above, is all the sculpture of the portal that has survived to our day. The Transfiguration that filled the tympanum

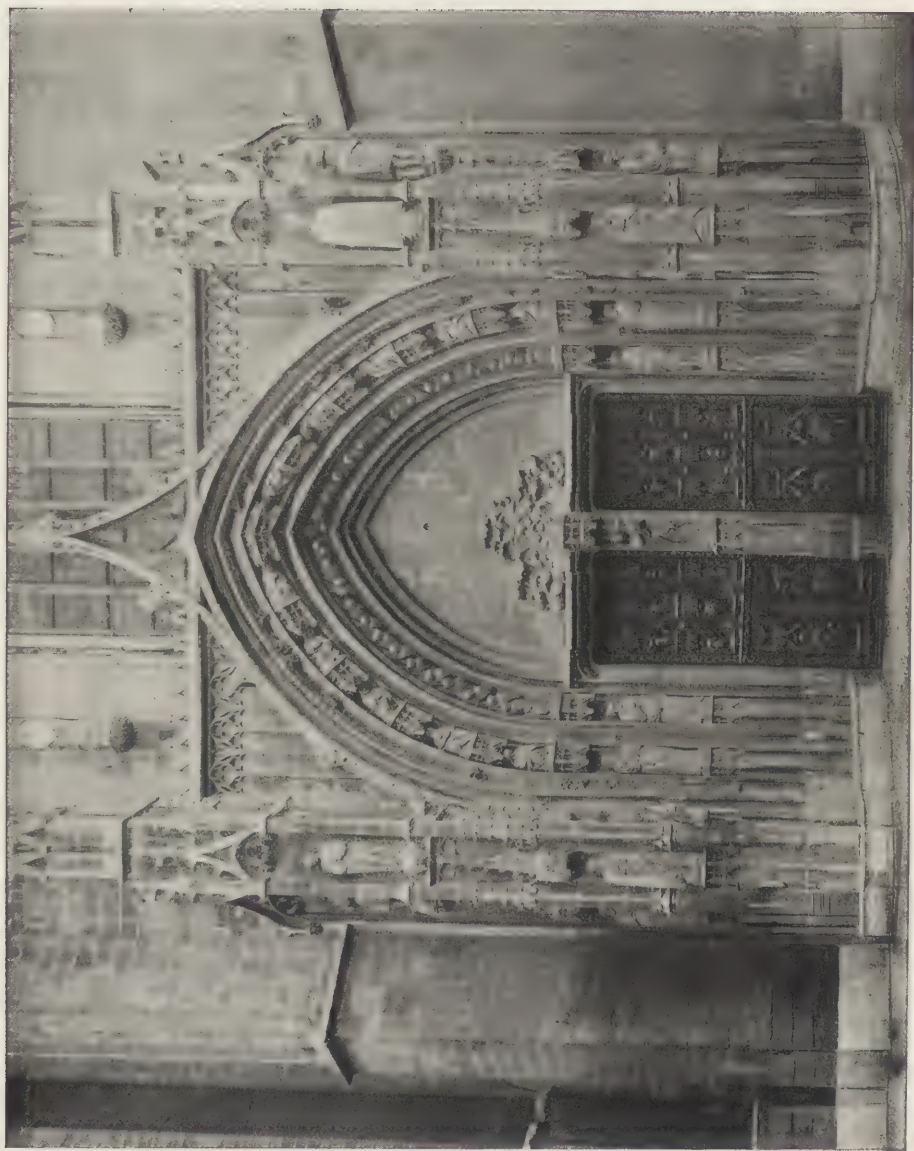
has disappeared save the Mount. All the other statues, save that of S. Michel, on the apex of the low gable of the front, were destroyed in the Revolution, the present sculptures having been put in place about fifty years ago. The original sculpture is attributed to Soqueti, and the statue of the Virgin shows him to have been a master of no ordinary power. The interest of this front suffers, of course, from the loss of so much of its original decoration, but it is an exceedingly good piece of composition; the parts harmonize admirably with each other, and although neither imposing nor elaborate, it is a very interesting work.

The carved wood doors (1504), which are kept encased in wooden covers, are among the most remarkable monuments of their class in southern France. Delightful examples of wood carving, their abundant detail, partly Gothic, partly Renaissance, testifies to their early date. They are unequally divided into two parts, of which the lower contains two large panelled niches in each door, with figures of Isaiah, Jeremiah, Ezekiel and Daniel. The upper parts have the twelve Sybols in two rows. All the figures have Gothic canopies, and are surrounded by foliage, or separated by richly carved pilasters or miniature Gothic buttresses. Internally the doors have a skeleton frame of richly chased bronze.*

The tower closes the north nave at the west end, and is recessed nearly a bay behind the line of the façade of the central nave. It has a large square base, without portals, with heavy buttresses on the corners that rise to the top of the square portion. It is plain and severe, with a large octagonal stair-tower on the northern side of the west face. The upper stage is octagonal, with a narrow round arched window in each face. The tower was never finished, but was completed in 1880, with an open balustrade with pinnacles rising at each corner.

Notwithstanding the importance of

*A cast of these doors, with their architectural framework, including the Virgin in the centre, is in the Metropolitan Museum, New York.



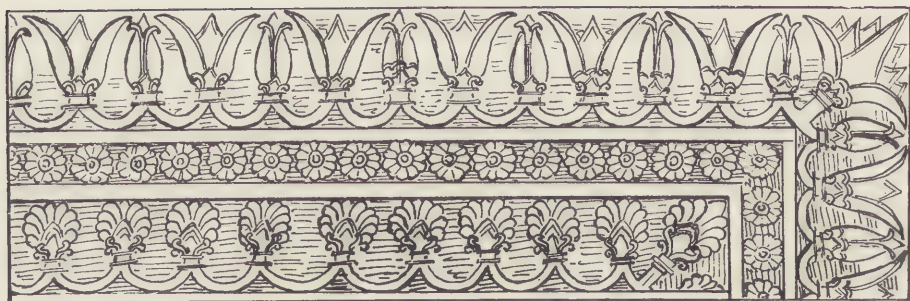
MAIN DOORWAY, AIX CATHEDRAL.

the cathedral of Aix in size, and the activity and importance of the city, this church appears to have had no influence on the other cathedrals of Provence or upon any Provençal church. Its Gothic portion was built at a time too late to have had many copiers, and its Romanesque portion is chiefly valuable because its date is tolerably well authenticated. This earlier portion contains no features that are not constantly repeated in Provence, and the whole cathedral is rather a type of a certain grade of architectural progress, than a vigorous, active work, full of promise for the future, suggestive and progressive in its art.

Barr Ferree.



PANEL FROM THE CLOISTER, AIX CATHEDRAL.



LINEAR PERSPECTIVE.

Part II.

THE REPRESENTATION OF SHADOWS AND REFLECTIONS.

WHEN considering the perspective of shadows and reflections new limits present themselves. It is at once evident that only theoretically exact delineations can be obtained, hard and true, and absolutely irrespective of diffusion of light and of the breaking up of the image due to an imperfect reflecting surface, both of which have to be considered, and can often be made of the greatest assistance in the production of a picture. Proceeding, therefore, upon strict lines, a shadow may be defined as the absence of light upon some object or surface due to some opaque body intervening between it and the source of light. To determine the limits of the shadow, it is therefore necessary to ascertain where the rays of light which just escape the intervening object infringe upon that upon which the shadow is cast; and this, it will be noted, can be done in perspective as readily as upon plan and elevation.

Quite a simple case is shown in Fig. 10. An upright post or rod, ab , has its shadow cast upon the horizontal surface, or floor, upon which it rests at b , from a point of light K . First, a point k has to be found where a perpendicular dropped from K will in-

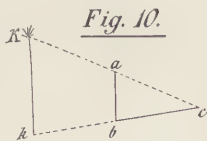


Fig. 10.

fringe upon this horizontal surface, which, as it is the plan of K , is easy enough according to the rules laid down in Part I. From k a line is then drawn through b and continued until it is cut at c by another line drawn from K through a . It will be at once seen that bc is the shadow of the rod ab as projected from K ; as, so long as the rod ab remains in its present position, no direct rays of light from K could reach any part of the line bc .

An almost equally simple case is that of the bracket projecting from a wall which is shown in Fig. 11, the only practical difference being that the point k has had to be ascertained upon the vertical surface of the wall instead of upon the horizontal surface of the floor.

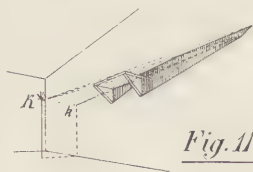


Fig. 11.

It will be obvious that the same result could be arrived at by first making mechanical elevations and plans showing the shadows as they would be projected upon the various surfaces, and afterwards setting out a perspective of the plane figure thus obtained. So long, however, as the shadows are thrown upon plane vertical or horizontal surfaces this operation would but

involve extra labor with no compensating gain; but it is quite another matter with inclined, and particularly with curved surfaces, where considerable eventual saving of trouble can usually be thus affected.

Sun shadows are, probably, more commonly required to be defined than fixed point shadows; but in treating these it must be remembered that the sun is so far distant from our planet that all rays of light from it which may fall upon any given picture may be considered, without appreciable error, to be parallel. Being so, they, of course, in a perspective representation, have a vanishing point, and when the sun is behind the picture plane it is easy to understand that this vanishing point must be in the location of the sun itself.

An example of this is shown in Fig. 12. In this, the point of sight is at A, and it is required to ascertain the shadow on the ground of the vertical post

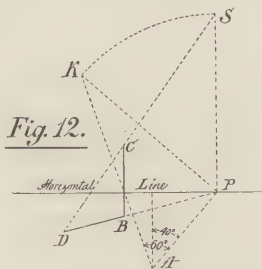


Fig. 12.

B C, when the sun is 40° to the right of the spectator, and at an angle of 60° above the horizon. Consequently an angle of 40° set from A to the right of the centre line of the picture gives the point P in the horizontal line vertically below the position of the sun, and to which vanish all horizontal lines tending in the sun's direction. Then by drawing P K at right angles to A P, and cutting it at K by a line drawn at an angle of 60° with A P, a section is made along the line A P and P K is ascertained to be the height of the representation of the sun above the horizontal line, which, swung round into a vertical position by compasses with leg fixed at P, locates the sun's representation at S. Now, by drawing a line from P through B, where the post enters the ground, and cutting this line by another drawn from S through C, which is the head of the post, the shadow of the post is found to be in the line B D.

When the sun is on the near side of the picture plane, and the shadows are cast into and not out of the picture, the vanishing point of the sun's rays (which, let it be remembered, are considered as parallel) is found by continuing them beyond the picture plane, thus locating it as much below the horizontal line as the sun is above, and as much to right or left of spectator as the sun is to his left or right. This is exemplified in Fig. 13, where the same point of sight A is taken, the same horizontal line and the same post BC; only this time the

Fig. 13.

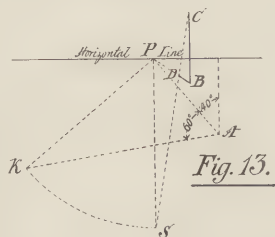


Fig. 13.

sun is said to be 40° to the right of the spectator and having an angle of 60° with the horizon (just as before so far) and to be in front of the picture plane. In this case, therefore, the angle of 40° is set to the *left* instead of to the right, and after the height P K has been ascertained as before, it is swung round until the same distance P S is set vertically *downwards* from P, thus locating the vanishing point of the sun's rays at S. The shadow B D is now ascertained as before, by joining B P, and cutting this line at D by a line drawn from S through C.

If a shadow from the sun has to be cast upon an inclined surface, such as a roof, the point P has to be ascertained in the vanishing line of the plane upon which the shadow is cast, the position of S remaining where it has already been located.

An example of this is given in Fig. 14. The house of which the perspective representation was obtained in Fig. 7 has had a roof added to it, with gabled ends, and sloped at an angle of 50° with the horizon. This has been done by obtaining the centre points, G and H, of each gable, by projection from the plan, in the same way as the other points were obtained in Fig. 7. Then, joining A to $V P_s$, drawing a line from $V P_s$ at right

on the picture plane at G, thus J G is the perspective representation of the reflection as J F is that of the post itself.

A little further argument will show that J G is exactly equal to J F; for if A D be continued downwards below the water till C B continued is met in E, then the angle B D E is equal to the angle B D C, and B E is consequently equal to B C—and if these be equal, J G and J F are equal also.

Thus, to ascertain the perspective of the reflection in water of any point which has already been itself ascertained in perspective, it is only necessary to discover a second point (which is necessarily vertically below the first, water having a horizontal surface) which gives the perspective of where a perpendicular from the first point infringes upon the plane of the water surface, and continue the vertical line thus found just so far again.

As an explanation is often more readily followed from an example than from verbal description, Fig. 16 is here inserted showing the reflection of the house already used in Fig. 14, as ascertained in this matter, there being supposed to be a river bank in front of the house, and the water level to be a little below that of the ground. As in the previous instances where this diagram has been used, all projections of eaves and verges have been omitted to render it less complicated; but it is in reality just regarding these things that it is most important to have a knowledge of the laws which govern the representation of reflections.

To deal with reflection from a vertical surface, such as that of a mirror, is generally more difficult, demanding something more than the mere use of a pair of compasses. Upon the whole

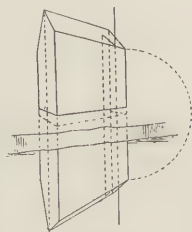


Fig. 16.

the best way to set to work seems to be that shown in Fig. 17, at any rate it is the simplest and most readily understood. This is a plan, A, as usual, being the point of sight, while P Q S T is the picture plane, and B C the plan

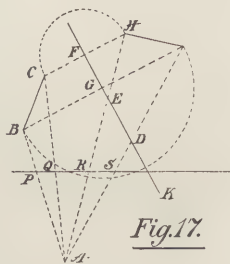


Fig. 17.

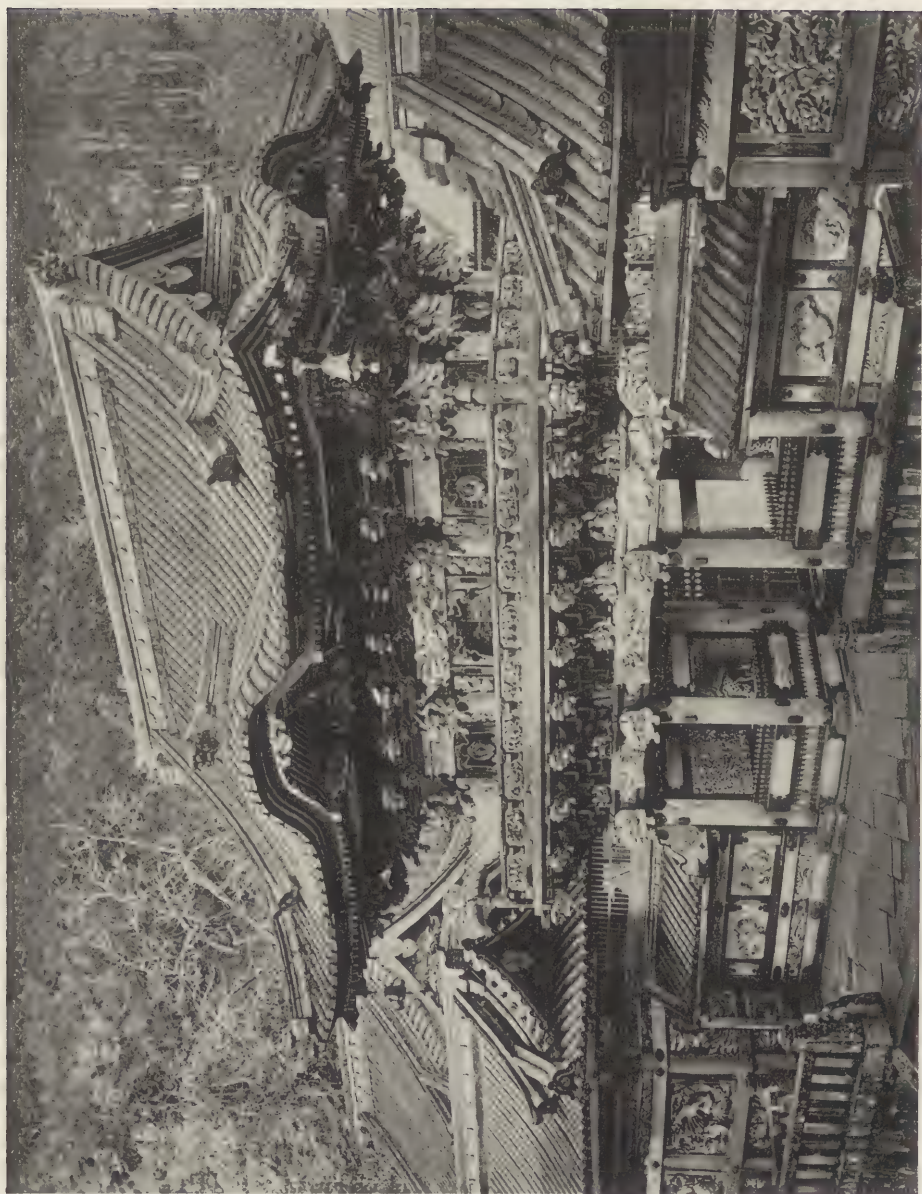
of the object to be shown in perspective together with its reflection from the vertical surface F G E D.

From B and C perpendiculars are dropped to F D, which they meet in F and G; and these lines, B G and C F, are then continued until G J is equal to B G, and F H to C F. The points J and H being now joined, a reversed plan of B C is thus obtained upon the further side of the reflecting surface. This reversed plan should now be projected on to the picture plane precisely as is the original object, when, the perspective representation of B C being at P Q, that of the reflection (or reversed plan) will be at S T.

That the representation of the reversed plan H A is the same as that of the reflected image E D is proved by the angles of incidence, C E F and B D F, being reflectively equal to the angles of reflection, A E K and A D K, the points E and D being those where the lines A H and A J cut the reflecting surface.

In conclusion, it may be once again pointed out that these hard and fast rules of perspective may be used for two purposes, viz.: for the production of a hard diagram of a building from given plans and elevations, or for the groundwork of an artistic drawing in which they have been softened and modified by taking other considerations into account. Considered for either purpose, however, a knowledge of them, full and accurate, is a necessity alike to the architect and the painter, if he would complete even a simple drawing without distortion.

G. A. T. Middleton



YOMEIMON.
Fig. IV.



JAPANESE ARCHITECTURE.*

HISTORY.

THE official records concerning Japanese architecture prior to 700 B. C. are so meagre, that little can be said authoritatively concerning its origin.

Nevertheless everything seems to point to that origin being a wooden one.

Thus the oldest chronicle, so far unearthed, tells how "Tsokina Hono-Mikkoto and his younger brother cut down trees and built themselves a wooden palace in the reign of Amatsu Hikodate-no-Mikkoto, and other records of somewhat later date treat the matter of house-building as though wood was the only material employed.

Before huts or houses were built at all, however, it is generally thought that the aboriginal inhabitants lived in *caves*. This surmise is based upon a legend of the Shinto mythology, which relates how Susano, having quarreled with his sister Ama-terasu, the Sun-Goddess, took revenge by breaking a hole in the roof of heaven and dropping upon her "a heavenly piebald horse which he had flayed with a backward flaying"; whereupon the Sun-Goddess much incensed retired to a *cave* and withdrew her light from the world for a season, until, thanks to the united efforts of the rest of the eight million deities, she was lured forth by stratagem, and the irrepressible Susano† was banished.

This retirement of Ama-terasu to a

cave seems hardly sufficient to prove that the Japanese were once cave-dwellers; but it is one of the most important reasons in the eyes of the natives, and so it is here set down.

But whatever the origin of *prehistoric* architecture among the Japs, whether hut, cave or tent, certain it is that the native style‡ of to-day, as well as that of all *historical* times, has been a wooden one, and derived from the huts of the Ainos, or half-savage aboriginal race, whose descendants inhabit only the Island of Yezo.

This nation bears very much the same political relation to the Japanese that the North American Indians do to the people of the United States. In civilization, however, they have made even less advancement, save in politeness, and their dwellings of to-day are almost identical with those of 2,500 years ago.

These dwellings or huts in early times resembled a triangular prism, being built without vertical walls. They consisted of two pair of young trees with ends crossed and tied firmly at their intersections to a horizontal beam, or ridge-pole, by strong wistaria roots (*fugi*). The ends rested on the ground, and the whole was thatched with reeds or straw.

As time wore on this hut was used only as a roof, and vertical walls were added by means of uprights at the

† Susano means "the impetuous male deity."

‡ The expression native style is used here in contradistinction to the Buddhist style brought into the country by the Goreans.

four corners and the middle of each side, the interspaces being filled in with coarse matting.

Reliable information concerning Japanese building art begins with reign of Jimmu Tenno, who ascended the throne in 660 B. C. and is believed to have been the first human ruler of Nippon, which had formerly been governed by Shinto Gods. During his reign an Imperial palace was built as well as a Shinto Shrine, and these gave the mode until about 201 A. D., when the Empress Dowager Jingō-Kōgō, the Semiramis or Catherine of the Far East, donned male attire and conquered Corea.

From this time Corea became to Japan what Greece was to Rome both in science and in art; but its real influence did not begin 522 A. D., when Buddhism was first introduced into the country.

From that date began the great fusion not only of the Buddhist religion with the Shinto cult, but also of the Buddhist architecture with the Japanese native style, which mingling continued moderately active until the end of the sixth century.

The Buddhist class of building had been learned by the Coreans from the Chinese, who in turn had derived it to a certain extent from Burmah. But the successive modifications to which it was exposed, instead of injuring it, only added power and beauty until (as previously hinted*) the Buddhist style of Eastern Asia reached its climax in the land of the Mikado.

During the early part of the seventh century a perfect furor for everything Corean swept over the land, and artists, architects, artisans, workers in metal and textile fabrics, wood carvers and ceramic experts from the Hermit Kingdom swarmed over the Empire. But in the period from 673 to 689 A. D. under the Emperor Temmu, a pause ensued, in which importation ceased, and assimilation set in.

Architectural features, which had entered the country, uncompromisingly Chinese or Corean in character, lost their original appearance, and being assimilated, took on a refinement and

elegance quite new and entirely their own. Hida-no-Takumi introduced symmetry, and a steady advancement toward purity of taste followed. This continued with slight interruptions until 1616 A. D., when the climax was reached in the temples of Shiba and the Tokugawa at Nikko, the masterpieces of Japan.

Since 1870 the inroad of Europeans and Western travelers has begun to tell architecturally upon the "Land of the Rising Sun," by introducing what is locally called the "foreign style," doubtless (as someone has remarked) "because foreign to all known styles of architecture." But as Mr. Chamberlain puts it: "We cannot with any grace blame a nation whom we ourselves have misled"; and "if Japan's contemporary efforts in architecture are worse even than ours, it is chiefly because her people have less money to dispose of."

DOMESTIC DWELLINGS.

Japanese buildings may be broadly divided into domestic dwellings, palaces, castles, Yashiki and Ecclesiastical edifices.

Of these, domestic dwellings are the simplest, being derived directly from the hut of the Aino, and consist for the most part of vertical beams (resting upon stones) morticed to horizontal beams, and carrying a heavy roof, thatched, shingled or tiled. As a rule, there are no permanent walls, the sides being composed in winter of *amado* or wooden sliding screens, capable of being folded up and packed away, and in summer of *shoji* or oiled paper slides, translucent but not transparent. Thus in warm weather all the sides of the house may be removed and the whole thrown open to air and ventilation.

Houses of the better class have both wooden and oiled paper slides all the year round, the former being used at night, the latter by day. The intermediate space is employed as a verandah or vestibule called *genka*.

No permanent partitions cut up the interior; but paper screens sliding in grooves divide the space according to the number of rooms required.

* See article in previous number.

If a house has a second floor, it generally covers only a portion of the lower story and is reached by a flight of very steep steps. The most striking feature of all Japanese interiors, to the average foreigner, is the total absence of furniture. Neither tables, chairs, beds or wash-stands appear; the reason being that the first two are scarcely ever used, that the *futan* or bed consists of a thick, soft quilt which is always rolled up and stowed away in a cupboard during the day, while the wash-stand is almost superfluous in a country where the commonest laborer often takes five baths a day, and would die of shame if he bathed less than three times daily. Ewers, it is true, are used for the hands and head (if there is no time for a whole bath), but like the bed are concealed in a cupboard, so that the general appearance of a bedroom is somewhat bare.

To counterbalance the lack of furniture, however, it is only fair to say that all the interior wood-work is exquisitely grained, and the floors are either finely polished or beautifully lacquered, that soft silken cushions supply the need of chairs and that *ramma* or carved ornamental friezes, recalling the work of Squarcione of Padua, give a refined finish to the whole.

In every house an alcove is built as a seat for the Mikado should he ever deign to visit it. Such a visit naturally does not occur in more than one case out of a million; but the alcove nevertheless is always built, and in it is placed a rare bit of pottery or a painted screen, which is usually the one ornamental feature in the room. This one adornment is changed by the owner every day when he can afford such a luxury; but the mass of his treasures are kept out of sight in a fire-proof building at the back, known as a *godown*,* for it is considered the height of vulgarity to spread one's valuables about the room as we do, and (if I may borrow a simile) as much as to say, "look what a lot of expensive articles I've got; just look how jolly rich I am!"

In this respect as well as in many others all Western nations might learn

from this plucky little people of the East, who never mistake extravagance for greatness, nor ostentation for beauty.

PALACES.

A palace, as understood by the Japanese, means not only the home of the Mikado but also a garden filled with the residences of the *kuge* or court nobles, and surrounded by a high roofed wall.

This garden is usually of large extent, as in *Kioto*, where it covers twenty-six acres; but the multiplicity of approaches and enclosures one within the other, so popular in Korean palaces, are here wanting, an arrangement limited for the most part in Japan to ecclesiastical buildings.

In old days the residence or palace of the Mikado consisted of a simple domestic dwelling of the kind just described, thatched with straw, and but little superior in decoration to that of the humblest villager; for the Emperor, being of divine origin, needed no earthly pomp and circumstance to give him dignity in the eyes of his subjects. In later years the examples of luxurious living set by the Shoguns have had their effect, so that in the present day the Mikado's palaces are quite elaborate in extent and decorations. In construction they resemble the domestic dwellings described above, save that they contain more permanent walls and are usually surmounted by roofs of a more elaborate type. As regards decoration, they have borrowed from the resources of the church, and many beautiful forms of ornament such as adorn Buddhist temples find their way into the abodes sacred only to royalty.

The screens between the rooms are of silk, painted with wild geese, chrysanthemums, Chinese saints and ladies who were not saints; or they are embroidered with exquisite copies of old masters like Cho Densu, the Fra Angelico of Japan or Mitsunobu and Mitsushige of the Tosa school. The friezes are gems of glyptic art and are often (as in the Niijo Palace) from the hand of Hidari Jingoro, the Pheidias of

* Godown, from the Malay word gadong—a warehouse.

Japan; while the ceilings (handsomely coffered in black lacquer with gold enrichments) dispute the prestige of beauty with the rest.

In the new palace at Tokio, the *shoji* or sliding screens are of plate glass, which is undoubtedly a mistake in a land so prone to earthquakes; and the furniture, having been manufactured in Germany, seems out of place in its Eastern home. But the walls are hung with rich brocade exquisitely woven, and the three million dollars lavished upon the palace seems on the whole to have been well expended.

CASTLES.

The palaces of Nijo and Tokio partake so much of the fortress or military character in their foundations as almost to warrant being called castles; but a number of buildings in Japan still exist in perfect preservation which may more properly claim the title of castle, and which belong both in time and in construction to the feudal type.

The castles are lofty, dignified wooden structures, capable of accommodating a number of men at arms, and of resisting spears and arrows, and are proportioned to obtain a certain grandeur and harmony.

Each story is placed a little within the one below the projecting portion being roofed with tiles (a fashion imported in the eleventh century). Dignity and an appearance of height are gained by carrying up a stone embankment; which in mediæval times alone afforded sufficient protection from civil disturbances.

The facing of this embankment* is of coursed rubble, quarried in high lumps and fitted without cement, and the corners have a parabolic curve outward, which lends an air of Norman solidity to the whole.

Most of the castles now extant date from the sixteenth century, though some have been completed at a somewhat later period, such as the Castle

of *Nagoya* (Fig. III.), built about 1610 by twenty feudal lords, for the son of Iyeyasu, and held to be the finest example in Japan.

YASHIKI OR HOMES OF THE TERRITORIAL NOBILITY.

The *Yashiki* or *spread-out house* is a form of building which found much favor in the days of feudalism, but which is now fast dying out. It is said to have been an evolution from the military encampments of early days, in which the general's pavilion stood high among its fellows, and was surrounded on all sides (at a respectful distance) by the tents of those of lower degree.

The noun *Yashiki* is collective. It stands for a hollow square often enclosing some hundred thousand square feet, lined with barracks of the soldiery, and bounding beautiful gardens interspersed with silvery fish ponds filled with fat carp.

Among these accessories of luxury rise the residences of the Daimio and his ministers. The whole is girt about by a roofed wall of mud plaster and tiles set high upon an embankment of masonry, and outside runs a broad, deep moat affording a home to the hardy lotus as well as countless herons, swans, ducks, geese and storks.

A huge roofed gate-way gives access to the enclosure, and here all save those of the very highest rank, like the Abbot of Zozoji, must descend from their palanquins, rickishas or other conveyances before approaching his lordship's abode. The residence itself differs but little from the palaces and castles just described; but the barracks have a certain individuality, and it is to these that foreigners usually refer when they employ the word *Yashiki*. They consist of long rows of two-storied buildings with projecting eaves, barred windows, hanging bays, tiled roofs and stone foundations; and they frequently form a part of the wall of circumvallation. The doorways are splendidly adorned with nail-heads, heavy bolts and iron straps; but these are employed only to give an air of

* NOTE.—In the stone embankment of the Castle *Osaka*, erected by Hideyoshi in 1583, several single blocks measure from thirty to thirty-six feet in length and fifteen in height.

solidity to the structure, which quality, alas, is sadly lacking in reality, the straps, etc., being for the most part wrought in sheet copper.

Both within and without the wood is left unpainted, showing the exquisite graining of the camphor tree, which resembles fine watered-silk. This elegance and simplicity of treatment not only wins its own mead of admiration; but by contrast greatly enhances the splendor of the Diamio's palace with its gorgeous enrichments of lacquer and gold.

Most of the old Yashiki have been partially torn down and converted into shops, but the great tiled roofs with their projecting eaves, ridges, and hip ornaments, the windows grilled with heavy wooden bars, and the doorways with their metal clasps still remain and silently testify to the feudal origin of these peaceful emporiums.

In the old books *Yashiki* are often referred to as *Miya*, the origin of which name gave rise at one time to much discussion; but it has now been definitely decided that the first *Yashiki* or *Miya* ever built was occupied by Jimmu Tenno in Kashiwara-no-Miya,* which fact is believed to fix not only the origin of the word, but also the approximate date of the first building of the kind, which was about 610 B. C.

ECCLESIASTICAL ARCHITECTURE.

All the ecclesiastical buildings in Japan may be divided into two distinct styles, namely, Shinto* and Buddhist.

Shinto temples are simply developments of the primeval hut or the domestic homes of the Ainos in Yezo; while Buddhist temples are evolutions of Korean architecture on Japanese soil.

The purest specimens of Shinto temples are built of plain white pine, surmounted by thatched roofs. In them

the coarse matting, forming the sides of the Aino hut, have given place to ordinary boarding, the earthen floor to a raised wooden one surrounded by a verandah, and the rough logs used anciently as weights upon the *Muna-osae* or "roof-presser" (a beam to hold the thatch in place) are represented by cigar-shaped pieces of timber neatly turned. At either end of the roof the rafters project so as to form a letter X above the ridge-pole. This treatment always stamps a temple as belonging to the Shinto faith, a fact farther emphasized by the presence of a *torii*, a sort of Japanese propylaea consisting of two columns, a lintel with projecting ends, and a tie-beam; a form of gateway always standing before temple enclosures devoted to the Shinto cult.

The *Torii* (as the name implies)* was used in old-times as a bird-rest, whereon perched fowls offered to the shrine; but offerings of this kind having fallen into disuse, it now only serves the purpose of an *arc-de-triomphe* like the Red-Arrow-Gates of Corea.

Types of isolated temples like that above described are every day becoming rarer in Japan, the introduction of Buddhism having affected the architecture even of the rival faith.

Thus the average Shinto temple is no longer a single building preceded by a *torii*, but a collection of buildings. (Fig. IV.)

The kind of temple above mentioned is still retained as the *Honden* or Main Shrine and remains exactly the same *internally*, with its oratory and holy of holies, where the sacred mirror, sword and emblem of the God are preserved; but *externally* a certain amount of carving appears, a number of roofed fences enclose it, and a series of approaches lend it the same dignity and aspect as the official residences of high dignitaries in Corea. Besides these there are secondary shrines scattered about the grounds, as temple offices, a theatre for sacred dances, a library, a treasure-house, an assembly-hall, a stable for the sacred white pony, and a number of other buildings, all of

NOTE.—*Shinto* is a Chinese word meaning "the Way of Gods," and is used in contradistinction to *Butsudo* or the "Way of Buddha." But though the word *Shinto* was not used in Japan until after the introduction of Buddhism, the faith which it represents was the indigenous religion of the country and is to day the National Creed. It is a combination of nature-worship, hero-worship and ancestor-worship, and numbers eighty myriad deities in its calendar. Its moral teaching is usually summed up in the words "Follow your impulses and obey the Mikado," and as a faith it is practised in its greatest purity in the province of Satsuma.

**Torii* from *tori* meaning a fowl.



FIG I. TEMPLE OF SHIBI.



FIG. III. PALACE OF NAGOYA.

which may be seen in the great temples of Ize or Izumo (Fig. IV.)

Since 1868, when Shintoism was re-installed as the state religion, a certain effort at enrichment has been essayed; but the Shrines of Ize and Izumo still stand as the most complete examples in evolution of the native style and are certainly free from the crimes of creation which contact with Europeans has lately caused to be conceived.

THE BUDDHIST TEMPLES.

Buddhism unlike Shintoism has no hereditary or traditional law to bind it to simplicity save the law of good taste. And this latter faculty has always been so inherent in every Japanese that few excesses have as yet been perpetrated. In the Buddhist temple one sees not only a marvellous artistic instinct for grouping and color, but a still more wonderful is imported from China or Corea becomes recreated the moment it passes through the refining alembic of the Japanese mind, and in no case has this purifying process been exerted more successfully than in Buddhist temples.

To judge one of these temples, however, one must lay aside previous prejudice, and look at them rather from the painter's standpoint than from the architect's point of view. For the Japanese are essentially impressionists in art, and like all impressionists their power lies more in color effects than in form and outline. Hence a temple is never designed as an isolated object, but always as a feature of the surrounding landscape, and thus appears more like great splashes of crimson, lacquer and gold down a mountain side than a symmetrical distribution of columns, windows and wall spaces. If the background is such as to require a still higher note of color, a gateway or supplementary building is generally enameled over with a luminous white.

Notwithstanding this splendor of conception, however, which uses the whole landscape as a canvas, it is in

detail that the Japanese most excels; for if he conceives like a giant, he invariably finishes like a jeweler.

The first building in a Buddhist Shrine which asserts itself is the "Sammon" or two-storied gateway, resembling in the distribution of its upper story the "gates of extensive wisdom," etc., in the noble official residences of Corea. The framing of the lower story, however, is arranged so as to form niches, in which stand the God of Thunder and Wind deity, the face of one being always painted a livid green, that of the other a deep vermillion, as though congested.

The roof, as in all gateways of Eastern Asia, is the most artistic feature, having broad overhanging eaves festooned in the centre and bent upward and backward at the corners, thereby disclosing a vision of complicated corbelling. Tiles are the most popular form of covering employed, though copper embossed with armorial crests has been much used since the seventeenth century.

Passing through the *sammon* the visitor or worshipper finds himself in the first terraced court only to encounter another gateway, more imposing than the last, leading to a second court, and so on to a third, until by traversing terrace after terrace he at last reaches the Oratory and Chapel. These courtyards are usually filled with all the concomitant buildings of the Buddhist cult, as well as with a number of bronze and stone lanterns presented by the *Daimios* in token of repentance for past sins.

Belfries, priests' apartments, a *rinzo* or revolving library, a kitchen, a treasure-house, a pavilion containing the holy water cistern and pagodas rise on either hand throughout, all crowned with festooned roofs, and clothed in crimson lacquer laid over the finest silk instead of cloth, as in the case with the valuable curios of Echizen.

Among the most imposing of these supplementary buildings are the *Gojinno-to* or pagodas, which are invariably square like those of Corea. Within each stands what at first sight appears to be a column passing through the centre as a support; a careful examina

tion, however, shows it to be no column at all, but a heavy beam hung from the apex of the roof like the tongue of a bell, so that in case of typhoons or earthquakes the centre of gravity is automatically altered according to the deflection of the building from the vertical, thereby preserving the whole in equilibrium.

Externally the pagoda is usually designed in five or seven stories, each set a little within the one below, and girt about with balconies and overhanging eaves as in China. The whole is usually lacquered in dull red save the lowest story, in which a bewildering mass of painted carving distracts the eye, and high above all a twisted spire of bronze forms the culmination.

Pagodas are not held in quite the same esteem in Japan as in China,

being valued for their ornamental qualities rather than as sacred retreats for private prayers. The latter as well as all religious services are generally held in the Oratory which, with the sanctuary or chapel, forms the temple proper. Before the courtyard of this Oratory stands a two-storied gate resembling the *sammon* above described, save that it is more elaborately sculptured. The extent to which this ornamentation may be carried is best seen in the *gateway* before the Mausoleum of Iyeyasu in Nikko (see Fig. II.), which exhibits the climax of sculptural elaboration even in Japan.

With such a sumptuous gateway the occidental mind naturally expects, nay, insists upon, a still greater crescendo of ornamentation in the temple to which it gives access; but here the

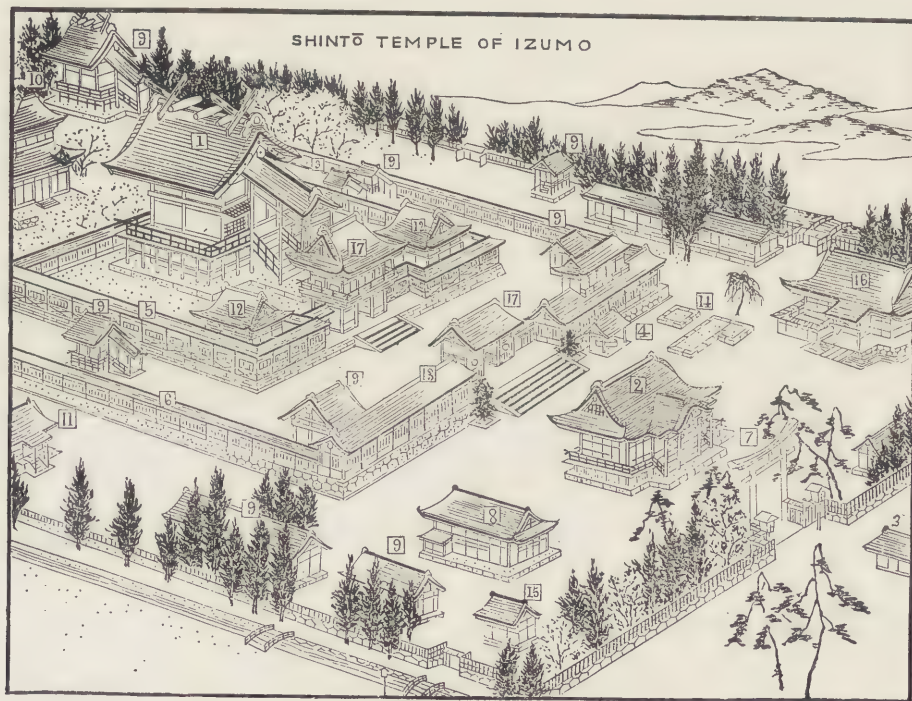


FIG. IV. FROM CHAMBERLAIN'S HANDBOOK.

- | | |
|---|--|
| 1 The <i>Honden</i> or Main Shrine | 9 The <i>Sessha</i> or Secondary Shrines |
| 2 The <i>Haiden</i> or Oratory | 10 The <i>Bunko</i> or Library |
| 3 The <i>At-no-ma</i> or Corridor | 11 The <i>Hozo</i> or Treasure House |
| 4 The <i>Mitarashi</i> or Cistern for Purification before Prayer | 12 Places for Offerings |
| 5 The <i>Tama-gaki</i> (Lit Jewel Hedge) a wall enclosing the principal buildings | 13 The <i>Kwairo</i> or Gallery |
| 6 The <i>Ita-gaki</i> or Board Hedge | 14 The <i>Kagura-do</i> or Dancing Stage |
| 7 The <i>Torii</i> | 15 Stable for the Sacred Horse |
| 8 The <i>Shamusho</i> or Temple Office | 16 Assembly Hall |
| | 17 Gates |



FIG. 11.—IYEFASU TORII, [OR GATE.

Corean influence again asserts itself, and the shrine, externally, is left comparatively simple. Like the domestic buildings of the better class, it is provided with a verandah and columns shaded by a gabled roof; and boasts a bracketed cornice in common with other ecclesiastical architecture; but though the wallspaces are covered with lacquer, the carving is used somewhat sparingly, in comparison with the gateway, and thus the temple acquires an added charm of dignified simplicity.

The real purpose of this simplicity, however, is to emphasize through contrast the splendor of the interior, the dwelling place of *Amida*, the ideal of boundless light. Thus the sanctuary containing the image of the God is as magnificent as painting, sculpture, lacquer and precious metals can make it; and the *haiden* or oratory preceding it is hardly less imposing.

The finest of these oratories in Japan is that of the temple *Ieyasu* at *Nikko*, which though lately converted by a decree of the Mikado into a Shinto place-of-worship, is still essentially Buddhist in all architectural distribution, decoration and detail.

Gold is the neutral of the walls, on which *Kirin* painted by Motonobu, the Raphael of Japan, perform graceful gambols. Two bands of inlay and two of open-work carving form the frieze, which is pierced at intervals by

columns gold-lacquered and capped with embossed bronze. Japanese brackets support a coved and coffered ceiling, with dragons, magnificently involved, posing in each compartment on a blue ground; and the whole room is reflected like a monochrome in the black floor of polished lacquer.

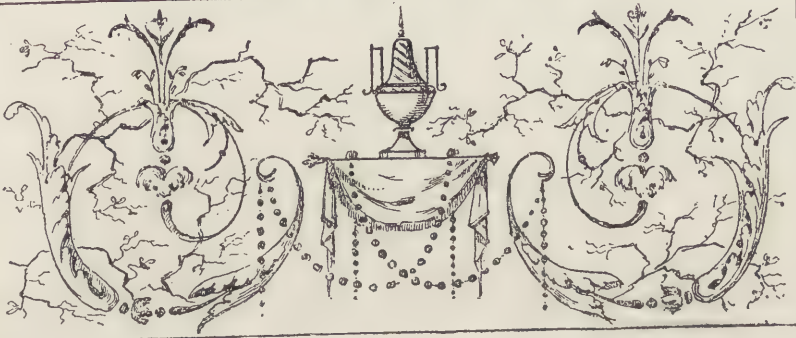
Soft silk-bordered mats, about six feet by three, protect the floor on ordinary occasions, and by their number declare the size of the room, for the mat is the unit of square-measure in Japanese architecture, it being customary to speak of a room of six, eight or four *mats* according to its square contents.

Such in brief is the architecture of Nippon.

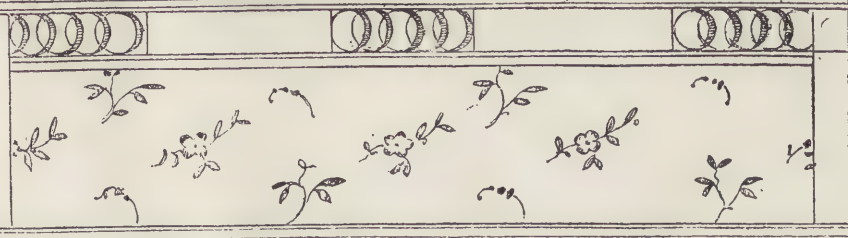
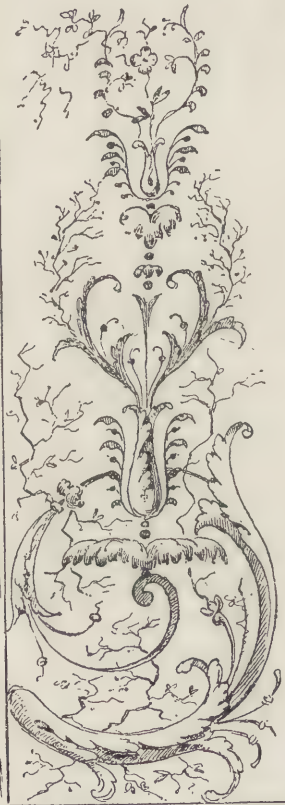
From the purely classic point of view, in which form and outline play so important a part, it may not rank very high in the scale; but to the eye of the Oriental it fulfils all that is required.

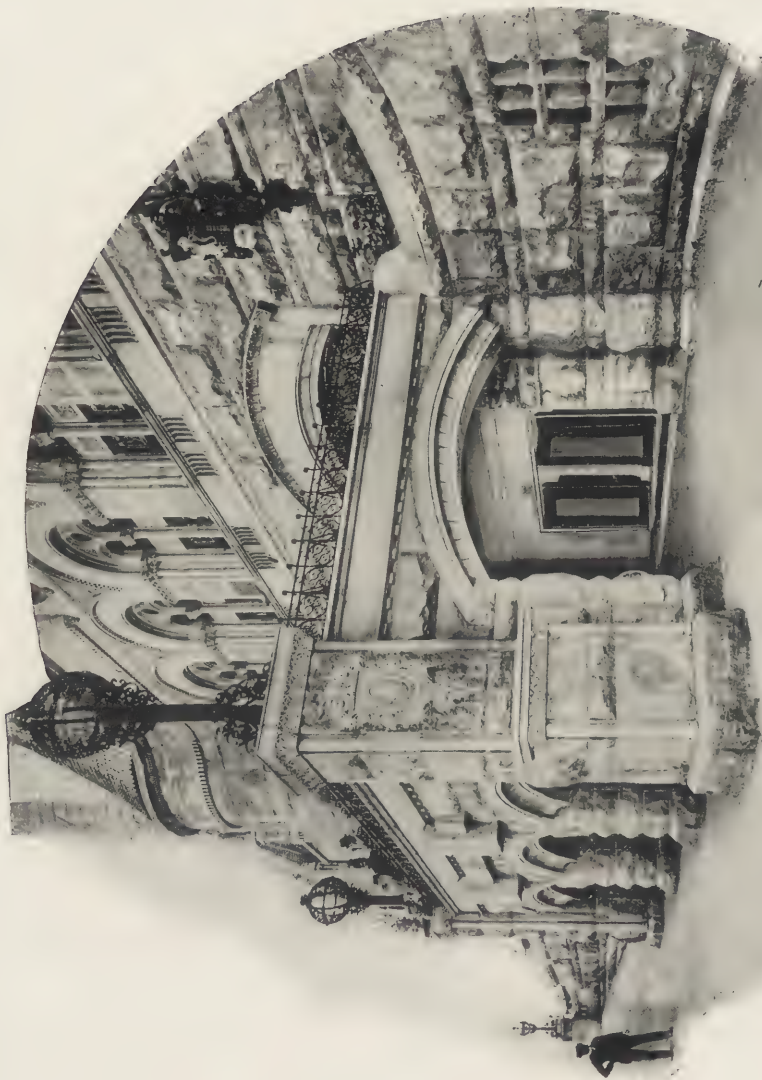
The roofs are certainly as graceful in curve and sweep as any in the world, and as regards color effects, the temples of Shiba and Nikko stand pre-eminent throughout the East. Besides the Japanese never mistake *bigness* for *greatness*, nor *ostentation* for *splendor*, and throughout their designs exhibit that exquisite refinement and reserve which contribute so much to the beauty of the "white ideals" of Greece.

C. T. Mathews, F. A. I. A.



EXAMPLES
OF
ARCHITECTURE
IN
ST. LOUIS





St. Louis, Mo.

DRIVEWAY ENTRANCE, UNION STATION.

Theo. C. Link, F. A. I. A., Architect.



THE WEST APPROACH—UNION STATION.

St. Louis, Mo.

Theo. C. Link, F. A. I. A., Architect.



St. Louis, Mo.

THE EAST APPROACH—UNION STATION.

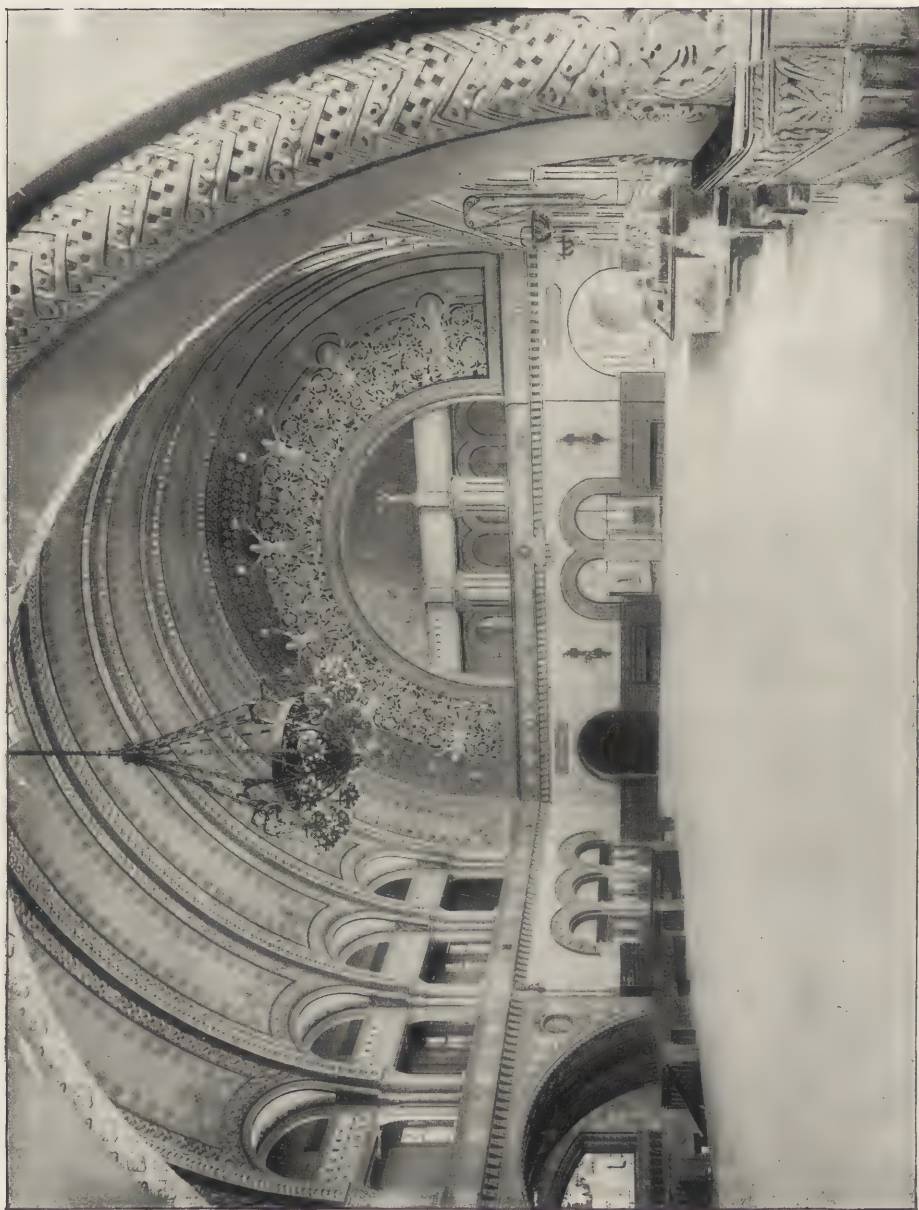
Theo. C Link, F. A. I. A., Architect.



VIEW OF EAST APPROACH—UNION STATION.

St. Louis, Mo.

Theo. C. Link, F. A. I. A., Architect.



St. Louis, Mo.

GRAND HALL, LOOKING EAST—UNION STATION.

Theo. C. Link, F. A. I. A., Architect.



GRAND STAIRCASE, BETWEEN THE WAITING-ROOM AND THE GRAND HALL—UNION STATION.
St. Louis, Mo. Theo. C. Link, F. A. I. A., Architect.



St. Louis, Mo.

THE GOLDEN ARCH—UNION STATION.

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Isaac Taylor, Architect.

Vol. V.-4,-6.



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MERCANTILE CLUB.

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PLANTERS' HOTEL.

Isaac Taylor, Architect. '7



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SOUTHEAST VIEW, RESIDENCE, W. K. BIXBY, ESQ.

W. Albert Swascy, Architect.



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RECEPTION HALL.—RESIDENCE OF W. K. BIXBY, ESQ.

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MANTEL IN LIBRARY—RESIDENCE OF S. M. KENNARD, ESQ.

W. Albert Swasey, Architect.



SPANDRIL, FIDELITY BUILDING.

CYRUS L. W. EIDLITZ.

CYRUS L. W. EIDLITZ, the son of Leopold Eidlitz, architect, was born in 1853, in the house at the foot of West Eighty-sixth street, New York, which his father had built a few years before and still occupies. It was built in what was almost a wilderness and it now fronts the Riverside Drive. The younger Eidlitz was destined from the first to the profession of architecture, and at the age of twelve was sent abroad for his education. For three years he attended a school in Geneva, and was then entered at the Royal Polytechnic School in Stuttgart in the Department of Architecture, in which Dr. Wilhelm Lübke was one of his professors. In 1871 he returned to New York and entered his father's office as a draughtsman. His first independent work was the rebuilding in 1878 of St. Peter's Church in Westchester, a church originally built by his father some thirty years before, of which the exterior had been damaged, and the interior destroyed by fire. This church was almost immediately followed by the building of a railway station in Detroit, which led to the employment of its architect to design the much

more costly and important Dearborn Station in Chicago, completed in 1885. The work, however, which Mr. Eidlitz made himself well known beyond as well as within the limits of his own profession and took rank as one of the leading American architects was the building for the Buffalo Library. In 1884 he was successful in a competition in which some very leading architects, among them Richardson, took part, and the success of the building itself, completed in 1887, insured his professional standing. This work was followed by the Metropolitan Telephone Building in Cortlandt street, and among the conspicuous buildings since erected in New York from his designs are the telephone buildings in Broad street and the Western Electric Building in Greenwich street, the building of the Fidelity and Casualty Company in Cedar street, the Racquet Club in West Forty-third street, the Bank for Savings in Fourth avenue and the building of the Bar Association in Forty-third and Forty-fourth streets.

Heredity must be allowed to count for something, and Mr. Cyrus Eidlitz began his work under very fortunate auspices. At the beginning of his pro-



RESIDENCE OF LEOPOLD EIDLITZ.
Riverside Drive, and 86th Street, built 1851.



TRIPLE CAPITAL—RACQUET CLUB.

fessional career he found himself already the inheritor of an excellent architectural tradition. Nobody who is intelligently interested in the progress of architecture in America can fail to be grateful for the contributions to its development that have been made by Leopold Eidlitz. He was employed as a draughtsman in the production of the designs for Trinity Church, which remains the most admirable church in New York, and which was the beginning in this country of the Gothic revival. As one of the pioneers of this movement, who worked under discouragements not easily conceivable to their successors, he produced a series of works in which was visible not merely a capricious preference for mediæval over classic architectural forms, but a rationalization of architectural form in general, that it should express and conform to the mechanical facts of structure, and the works which manifest this purpose manifest also a powerful artistic individuality. The author of the old Produce Exchange, of the Brooklyn Academy of Music, St. George's Church, the Temple Emanu-El, and above all, of the Assembly Chamber and the Senate staircase in the Capitol at Albany, assure of an honorable place in the history of American architecture. Perhaps this is not the place for the present writer to record his personal obligations for the teaching by precept of the architect who has taught his art by

these examples. But he cannot refrain from applying to Mr. Leopold Eidlitz in respect of architecture what Fox said of Burke in respect of political knowledge, that "if he were to put into one scale all that he had learned from books, and from other men, and in the other all that he had learned from the conversation and instruction of his right honorable friend he should be at a loss to which to assign the preference."

It was under these influences that Mr. Cyrus Eidlitz began his professional work, which from the first bears testimony to them. The interior of St. Peter's, Westchester, is so interesting that it is to be regretted it cannot be illustrated. It is a rather lofty nave of four bays, an apsidal chancel and transepts with an open timber ceiling of steep pitch, and low aisles, the nave-arches, carried upon columns of polished granite, themselves of alternate voussoirs of brick and stone, and the aisle-walls lined with brick in different colors. A peculiarity of the design is the opening by a large pointed arch of the gable wall at the end of the nave, and of the corresponding wall over the chancel arch, a very effective device by which the framing of the roof at the crossing and of the roof of the apse are made visible from the nave. The roofs are excellent examples of decorated construction in timber. The architect's color-decoration enhances the effect of these dis-

positions and is highly successful, a sober and rich harmony in brown, red and gold.

The station at Detroit is not without interest on its own account, but its principal use to the designer was in the training it gave him for a much more important work in the same kind, the Dearborn station in Chicago. This remains architecturally by much the best station in Chicago, and one of the ornaments of that city. The outcome of a railway station, even when it also houses the offices of the company, is a low building, and a lofty clock tower is "indicated" as a means of giving it importance as well as for its own appropriateness and utility. The present tower is a very picturesque object, with the main entrance alongside of it, and not in it, which would detract from its apparent solidity, by its boldly rusticated base, its smooth and solid shaft, effectively banded and effectively pierced with openings that emphasize its solidity and especially by its effective and original crowning member, the saddle-backed and hipped roof, with its many storied gable. The originality of this tower is the more impressive and acceptable because it so evidently proceeds not from a mere caprice, but from a rational analysis. It is all the more admirable because Chicago is on the whole a spireless city, and so good a spire is there especially effective, the more effective because it is happily placed so as to close the vista of a street, whereas commonly the vista of the street dwindles out flat and straight *ad infinitesimum*. The building thus effectively crowned is architecturally, one may say, mainly of importance as a base and setting for the tower, but it is well designed in itself. The expressive treatment is also impressive, by which rooms that come where and as many and as large as they are wanted, are yet brought into a composition, of which the general balance has more life than would be given to it by a formal symmetry. The texture given to the walls by the bands of reeded brick is effective, and the broad, low dormers, with

the emergence of the tower, sufficiently relieve the otherwise unbroken expanse of the main roof. One might wish for a somewhat more aspiring character in these dormers, it is true, and indeed the charge of an undue heaviness might lie against the general treatment of the building, excepting always the tower. This character is promoted by the scale of the detail, which is perhaps excessive in protest against the commoner recent fault of a niggling minuteness, which so many designers confound with "refinement." The just mean in this is not easy to hit, and to hit it requires experience. But the quality of this



Capitals—Racquet Club.

detail is very good. The design of it shows life, vigor, invention, and, in the terra cotta, an intelligent recognition of the peculiar plasticity of a material which is shaped soft and fixed into rigidity by exposure, as may be seen by comparing it in this structure with the detail in stone work. Suggestions in design from the use of the chisel enhance the attractiveness of detail in stone, and are inadmissible in terra cotta. The tame smoothness of surface that impairs the effect of so much otherwise well-designed work in terra cotta is here avoided merely by random strokes of a saw on the wet clay. This very simple expedient fulfills perfectly its purpose of giving texture.



Double Capitals—Telephone Building, Broad Street.



Capitals—Main Pier, Racquet Club.

The Buffalo Library presented a far more difficult and complicated problem. This was to accommodate a library, a gallery of works of art and the collections of a historical society, on a site which, though ample in extent and admirable for conspicuousness, was of extreme irregularity, a right angled triangle truncated at the apex, which was also the most conspicuous part of it. The building committee had sent to the competitors a sketch plan suggesting the distribution of space, and the practical convenience of this plan was as apparent as its architectural intractability. This latter, indeed, would be admitted by most artistic designers on the evidence of the ground plan of the building as executed. Richardson characteristically cut the Gordian knot by ignoring the suggested arrangement and setting his building across the back of the plot. This gave opportunity for a symmetrical treatment and a long expanse of wall, the expanse of which he enhanced by covering it with an arcade, with a massive round tower at one end and a turret at the other. It was an excellent example of his talent for simplification, one of his most effective designs, and though he had not the opportunity of executing it, the motive has been adopted, and carried out better or worse, in actual works by less distinguished architects. But it seemed to the committee that this was a case too complicated to be reduced to so very simple an explanation. Mr. Eidlitz, in his letter to the committee, wrote that the making of many independent studies had "confirmed the impression that no disposi-

tion essentially different from that arrived at by you could, under the conditions of the site and the limit of cost, be made to meet so well the varied requirements of your enterprise." The architectural difficulties of the most rational and eligible arrangement, the architect properly and loyally assumed as his affair. Perhaps this assumption betokened also a belief that the faithful following of the actual requirements of a building under the actual conditions is the process that, far more than the assumption of an ideal form, leads to the most artistic result, since it gives the best assurance of individuality and thus the best promise, the only legitimate promise, of novelty and "originality." However that may be, the sketch plan submitted to the architects is in its outline the plan of the actual building. The chief change introduced by the architect was that while the basement and first-story of the main building were carried to the limit of the site, thus producing a book room sufficiently capacious but incapable of being sufficiently lighted, he withdrew the wall above the first story far enough to admit an ample skylight. The recession of this upper wall at the centre, and the retention of it at the flanks, supplied an architectural opportunity of giving form to the main building, enforced variety in its roofing and converted it into a composition, an assemblage of related parts. The crucial difficulty of the design, however, remained, and that was the uniting into an architectural whole of two buildings upon diverging axes. It



PIER CAPITAL.—FIDELITY BUILDING.

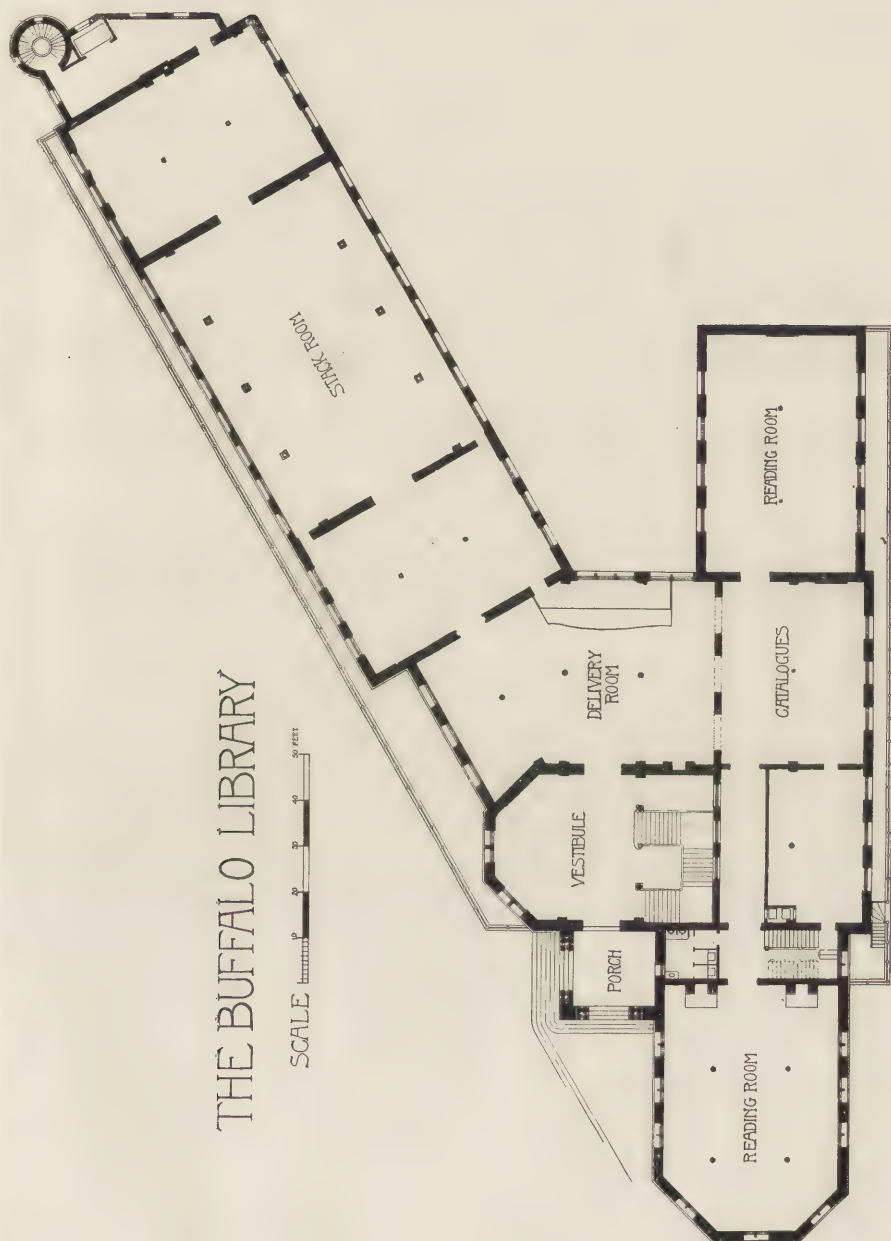
will be agreed that this difficulty was very cleverly overcome by the expedient adopted, of a massive porch at the re-entrant angle of the junction, and the erection just beyond it of a massive polygonal tower, which constitutes a point of departure from which the different buildings may diverge, without entailing the sense of awkwardness and disconnection that seems to be threatened by the ground-plan, and which supplies a reconciling, dominating, unifying feature. The treatment of this tower is very good indeed. Its monumental quality is scarcely compromised by the evidence it affords that each of its stages is made the most of for practical uses. Though it is plain that academical correctness was the last thing in the designer's mind, the building may be loosely classified as an example, or rather as a reminiscence, of German Romanesque, and this impression is most strongly given by the tower, which in its stalwart proportions, the division of its stages, the gablets above its alternate faces, and its simple and spreading roof pretty distinctly recalls Rhenish architecture. The same character is given to the building in general by the simplicity and massiveness of the treatment and the vigor and boldness of the detail. It is without dispute a distinguishable success, which becomes more remarkable when the conditions, at first sight so unpromising, are considered, and when it is considered that the success has been made not by shirking but by loyally accepting these conditions.

Of about the same date with the Buffalo Library is the Telephone Building in Cortlandt street. It is curious to note how the introduction of the skeleton construction has anti-

quated the commercial buildings erected before its advent, almost in as great a degree as the introduction of the elevator nearly twenty years before. It is not at all likely that the owners of the plot upon which the Cortlandt street building stands, if they were to build now, would limit themselves to the comparative modesty of eight stories. Neither indeed is it likely that they would acquiesce in the comparative massiveness of treatment which was in part enforced by the conditions of masonic structure, and in part due to the architect's evident purpose to make the very utmost of the spaces necessarily reserved for points of support. Considering the conditions of a commercial building, it is almost a compliment to the architect to say that the massiveness of the building is carried so far as to give the impression of heaviness which is doubtless the defect of the design. This is due more than to anything else to an exaggeration of the scale of the detail. This does not hinder the building from being interesting and successful. The front, which is of some 70 feet wide by over 100 high, is triply divided both laterally and vertically. The vertical division is into a basement of two stories in red Scotch sandstone, with piers and lintels of metal in the first story. The superstructure is in dark buff brick and terra cotta, and the second stage is composed of three stories virtually uniform in treatment, with three openings in each of the flanks and two at the centre, covered with segmental arches in terra cotta. The lateral piers are withdrawn into the plane of the main wall above the fourth story, with heavy decorated offsets, while the centre maintains its projection and

THE BUFFALO LIBRARY

SCALE  20 FEET





Buffalo, N. Y.

THE BUFFALO LIBRARY.—1887.

Cyrus L. W. Eidlitz, Architect.

is spanned above the fifth story by a round arch in sandstone, recalling the material of the basement. These dispositions, it is evident, are intended to take away the hard and crude aspect of a front built in layers, without compromising the general division, and in this they are entirely successful. The seventh story is a series of round arches, turned between stout columns and considerably enriched, while the openings of the eighth, aligned over the arcade, are covered with "shouldered lintels," single blocks dropped between spreading skewbacks. This is an arrangement especially appropriate to terra cotta, since it reduces the size and the bearing of the actual lintel to a block easily manageable in baked clay. The entrance, a heavy Romanesque archway, with a large decorated roll at the intrados, is very effective. The elements employed here the architect has employed in subsequent work with a success that makes the use of them here appear a little crude and rudimentary. But nevertheless this building is upon the whole a first attempt not only encouraging as a promise, but a distinctly successful performance. No

attentive observer of it can fail to remark with pleasure the idiomatic and vernacular treatment, in several instances, of terra cotta with reference to its own qualities, and not merely as a cheaper substitute for stone, and the extension of this treatment in later work is one of the designer's chief claims upon the esteem of his profession.

The Western Electric Building, a year or two later than the first Telephone Building, unfortunately stands where it cannot be fairly seen, bounded as it is on one side by a street that is little more than an alley, and on the other by the elevated railroad. It is worthy of a better place, because it is an exemplary specimen of a class of buildings which not only owners, but even many architects, do not seem to consider to belong to architecture at all. Formerly, when factories were limited to four or five stories, the builders of them disdained to invoke the aid of architects. Now that an increase of height and weight has rendered a factory so much more complex mechanically than it used to be, that it is necessary to call in a trained constructor, he commonly confines himself



New York City.

WESTERN ELECTRIC BUILDING—1889.

Cyrus L. W. Eidlitz, Architect.



Broad Street, New York City.

TELEPHONE BUILDING—1890.

Cyrus L. W. Eidlitz, Architect.

to the consideration of the mechanical problem. In Chicago, when the architects design the factories, they deduct two-fifths from their ordinary commissions, on account of leaving out art, I suppose, and never think of enumerating the factories they do among their "works." All the worse for the factories, which are sure to be conspicuous buildings and which really ought not to be eyesores. The building of the Western Electric Company is very far indeed from being an eyesore. The designer has recognized that it was not seemly to enrich a factory, or to add to it the "unnecessary features" in which Mr. Ruskin declares architecture exclusively to consist. In the Western Electric Building the only features that can be said to be unnecessary are the moulded string-course above the third story, the projecting corbelled course above the ninth and the crowning parapet, and these are designed with the simplicity appropriate to a building of strict utility. The building owes its very respectable aspect to the general composition, and this consists mainly in the fortification of the angles, which are somewhat more solid than the huge sash frames they enclose, and to some emphasis upon the depth of their openings. The effect of these dispositions is merely enhanced by the introduction of the members mentioned and by the expression of the structure in which alone the ornament consists. All this seems very elementary, but nevertheless it is very commonly disregarded by architects who have factories to do, and even by architects of name who in other lines of work manifest professional ambition and power of design. A factory is as proper an object of architectural design as a palace, in its own way. It equally demands its own suitable expression. In the great architectural periods every erection whatever was an object of architecture—was at least an exposition of its own construction. It is an impeachment of the interest in art in which we are coming to plume ourselves that any class of buildings should be considered to be taken out of the architectural class, just as it is

an impeachment of the artistic temper of any individual architect that he consents to leave out architecture from any building that he undertakes, just as it is when he consents to confine his architecture to one face of a building, and in effect asks the spectator to leave out of view another face equally conspicuous. It is for this reason that the Western Electric Building, which is at once an unmistakable factory and an unmistakable work of architecture, is so highly exemplary.

The Metropolitan Telephone Building, in Cortlandt street, has now been followed by a like building in Thirty-eighth street, of which it is architecturally the progenitor, and by one in Broad street, which is of a different motive, and is undoubtedly successful in its not very pretending way. This is a seven story building, with a basement of one story, a middle division of five and a colonnaded attic in buff brick and buff terra cotta. Of this the Western Electric may be called the architectural progenitor, the main motive being here repeated; that is to say, the fortification of the angles whereby a triple division laterally is secured to each front, in addition to the triple vertical division already secured. The single entrance at each end of the narrower front adds plausibility to this division. As is appropriate to the uses of the building, the emphasis by ornament of the structural divisions is carried further than in the factory, and the colonnade of the attic gives even an impression of richness, though the building is upon the whole plain, as it should be. The other feature is the rather rich and successful Romanesque archway by which is signalized the main entrance of the longer front. The fire-escape, introduced here merely by way of reassurance, since the building is fire-proof, is so managed as not to "bother" the architecture and become aesthetically innocuous.

The Black Building, in William street, is descended again from the Telephone Building. It is so much the most successful of the group to which it belongs that I am sorry it is



FIDELITY AND CASUALTY BUILDING—1894.

New York City.

Cyrus L. W. Eidlitz, Architect.

not practicable to illustrate it here. It is the introduction and the treatment of the gable and the design of the entrance that give it its family resemblance, though decidedly it has a physiognomy of its own. It is of red sandstone, cream-colored brick and terra cotta. The lack of symmetry in the front, it is to be hoped, may be corrected by the addition of another wing, but the architect is not only not to be blamed, but is to be praised for it, considering his conditions. He has set his triple arcade, which should, of course, be a central feature, with its crowning gable opposite the debouchure of a street, the vista of which, from the other end, it stops in a very effective and picturesque way. The tall arcade becomes all the more striking when it is thus framed. It is very well proportioned and detailed in itself, and it is framed in the building above by the arcade attic and below by the plain story which is interposed between it and the basement, although unfortunately not at the sides. To me this is the most successful of its author's commercial buildings, always excepting the Fidelity.

It is to be noted that he has not thus far in any executed work except the Fidelity Building been called upon to attack the real problem of the present in commercial architecture—the skyscraper. The comparatively modest altitudes of nine stories or less that we have been considering do not raise the question as it has been raised by the skeleton construction. Mr. Eidlitz has now in progress, however, two unquestionable skyscrapers, if we put the limit at ten stories. One is an extension of the Metropolitan Telephone Building to Dey street, where it will emerge in a front of twelve stories, vertically extensible three or four stories more, which he proposes to face with a veneer of glazed white terra cotta. The other is the Townsend Building, at Twenty-sixth street and Broadway, of which the sketch is herewith shown. This sketch exhibits plainly enough that its author has an intelligent appreciation of what has been established by the experience

of the pioneers, that the skyscraper must have a powerful base, a plain shaft and a rich crown. In respect to the base, the designer of a skyscraper in the "shopping district" at once enjoys an advantage and labors under a disadvantage in the same condition—that is to say, the necessity of a very lofty and a very light ground floor. The first condition gives importance and separateness to his base; the second forbids him to give it massiveness and compels him to attenuate his piers to the structural minimum. In this respect the architect of the Townsend Building has availed himself to the full of his privilege, and has loyally accepted its corresponding misfortune. The general scheme is promising. So much depends upon execution in structural, as well as in decorative, detail that more than this can not safely be said of an unexecuted project for a skyscraper, which is, indeed, necessarily subject in execution not only to supplementing, but also to more or less of modification.

The building of the Fidelity and Casualty Insurance Company is one of the most noteworthy and successful of our tall buildings. As in the Broad Street Telephone Building and the Racquet Club, the main motive of the design is a framed arcade. This is carried out to a very good result in the longer front, where the central arcade of four openings receives a visibly ample abutment from the more solid wings, where it is set upon a sufficient base in the two stories of stone basement and the intermediate story of perfectly plain openings, and where it is appropriately surmounted by another plain intermediate story under the emphatic and rather rich cornice and the slim dormers of the roof. The sense of abutment is enhanced, and indeed the whole front gains very greatly, by the emergence above the cornice of the wings as pavilions, and their separate roofing. Perhaps the narrower front, which so few people have occasion to look at close at hand, is even more successful. Certainly it is one of the most agreeable and picturesque of the objects that animate the skyline of the lower



New York City.

RACQUET AND TENNIS CLUB—1891. Cyrus L. W. Eidlitz, Architect

island as seen from the North River. Here the arcade is reduced to a single central opening flanked by simpler and smaller openings that do not disturb the sense of security and consequently of repose that is imparted by its expanse. The proportions of the front are those of a real tower, and the treatment is picturesque in spite of the avowedly utilitarian purpose of the structure. The tower is happily crowned by a parapet story and a steep roof, relieved by dormers, in just and rhythmic relation to what is below. It is the more a pity that the building is so much obscured by the elevated railroad, for, as the illustrations prove, it contains some of the author's cleverest and most idiomatic detail in terra cotta.

The three quasi-public buildings which are the latest of Mr. Eidlitz's executed works, the Racquet Club, the Bank for Savings and the building for the Bar Association, as they are the most important are also the most interesting of his contributions to his art thus far. Any one of them taken by itself would give its author a place in the first rank of his profession. The three taken together give one a new notion of his range and versatility.

The Racquet Club presented an unusual advantage in the extent of its frontage, 142 feet. It presented also what at first sight was a disadvantage in that the conditions required that the playing courts should be at the top of the building, should employ every available inch of its area, and should be bounded by solid walls. Yet it is to the faithful adherence to this unpromising requirement, that the top of the building should be the solidest part and that there should be no break or recess in it, that the building owes its physiognomy. Had the conditions been less rigid the designer would naturally have enforced the triplicity of his lateral division by withdrawing or by opening either the centre or the wings. In the original sketch it was proposed to enforce this division by the erection of a belvedere or roof-garden at each end, and doubtless this would carry still further

the expression of the general scheme. But it is expressed already in a very emphatic way.

The central feature of the composition, to which all the rest is subsidiary, is the arcade of five openings running through the second and third stories and dominating the whole front. As he was prevented, by the necessity of carrying his upper wall to the outer limit, from withdrawing the centre either above or in its supports below, the architect embraced the opportunity left to him of signaling his central feature by giving great depth to the piers of his arcade while leaving their faces in the plane of the advanced wall above. The result, as everybody knows, is extraordinarily impressive. It would be difficult to find in New York another piece of architecture which gives such an impression of nobility and power. And yet there is nothing of "brutality" in the vigor of this arcade. The piers stark, but for one emphatic moulding at the angle, in the lower story, are modeled into a rank of shafts in the upper. Mr. Eidlitz has employed this arrangement also in the pilasters that relieve the blank wall of the upper story, but there the absence of an evident reason for "drawing the line" gives it a look of something forced and arbitrary. In the present case the transition coincides with the division of the stories which, although the two are grouped, is rather emphasized than slurred by the deep and heavy recessed transoms, and the transition from plain to modeled pier helps to mark this division. The inherent effect of this succession of powerful piers and arches is greatly enhanced by the fact that the arcade is heavily and unmistakably framed. To build arches without visible abutments is a very common vice, the victims of which do not reflect that the more powerful the aspect of an unbuttressed arch, the weaker is the aspect of the wall of which it is a part. The power of the arch is the measure of its tendency to "kick," and when there is no visible provision for arresting this tendency, the strength of the arch is the weakness of the wall, and the wonder of



22d Street and 4th Avenue, New York City.

THE BANK FOR SAVINGS BUILDING—1894.

Cyrus L. W. Eidlitz, Architect.

the spectator is what prevents the wall so vigorously attacked and so undefended from tumbling down. This is the feeling the central arcade of the Racquet Club would inspire if it comprised the whole front. This is the feeling that a near neighbor of the Racquet Club does inspire and that I am afraid I must add, is inspired by one of Mr. Eidlitz' own works, in other respects so admirable, the Black Building in William street. But in this case, the wings with their smaller openings and their solidier treatment, supply to the great arcade its visible means of support, and give to the whole front an assurance of stability. The arcade is equally framed above and below. In the latter case it is detached by the single story of simple openings, which might perhaps with advantage have been simplified still further by the omission of the porch, and the restraining of the entrance to the plane of the wall. There is nothing in the porch, except the clever modeling of the capitals, which would make its absence regretted. Above, the arcade is framed by the solid boundary of the courts, unbroken except by the slight buttress-pilasters that denote the rafters and the decorated panels between them. It is questionable whether a lighter and richer treatment of the upper story, had it been practicable, would have been as effective. Certainly it could not have more strongly detached and emphasized the arcade. It is a very good lesson in architecture to note how the effectiveness of this front depends upon the subordination of all the rest to the central feature. It was such a reduction that made the fortune of Richardson's most successful works, and his felicity in which made a great part of his power of design. It remains to be added that the detail by which these dispositions are enhanced is almost unfailingly admirable. It is the more admirable because it is thoroughly characteristic of the material. The plasticity of terra cotta has seldom been more effectually recognized and made available than in the ingenious and spirited detail of this front. Alike in the capitals

of the piers, in the ornament of the spandrels and in the shields of the panels, the spectator receives an assurance that the necessary medium of the design is modelled clay, and this correspondence of design and material is an element in the pleasure he derives from it. The building is also very fortunate in color, brown stone in the basement of a tint that goes very well with the rich and dark mottled brick and a somewhat darker terra cotta, so employed that the weight of color tends everywhere to accentuate the stress of the construction.

The Bank for Savings in Fourth avenue is so admirable a piece of architecture that it is especially gratifying that it should have achieved so marked a success with the public, should be, indeed, perhaps the most popular of recent buildings. The nature of this success is very well worth inquiry. In the first place a savings bank is of course a particularly tempting problem, and it has become the more tempting since so many commercial institutions have succumbed to the temptation to submerge their own abodes in or under a mass of income-yielding apartments, among which their own quarters can with difficulty be identified. It is impossible to blame ordinary commercial corporations for doing this. Their defense is as conclusive as that of the legendary Irish peasant, expostulated with upon his extraneous inmate, is indeed, identical with it: "It is the pig that pays the rent." Still the provision for the extraneous inmate undoubtedly tends to confuse the architectural expression of what is primarily the home of a commercial institution. When a commercial institution sees its way to providing itself with a building exclusively for its own use, it earns the gratitude of its architect, and, if he be the right architect, of lovers of architecture in general. A savings bank is one of the very simplest architectural problems, consisting really only of a single light and airy and consequently lofty apartment, with its dependencies, and in the present case the actual requirements were reduced to the essential requirements, and the architecture to their simplest

expression. And how very effective an expression it is! The very happy thought of withdrawing the superstructure into a cross, while carrying the substructure to the limits of the rectangle, served the purely artistic purpose of detaching and emphasizing the principal story, and the practical purpose, which is here also an artistic purpose, of enabling the architect to treat his porches and other dependencies as dependencies, and, although the separateness of the stories is emphasized, to express unmistakably and in spite of this division, the unity of the apartment, the fact that he is building a room. And the general scheme is carried out with consistency to the last detail. The absolute plainness of the basement, excepting the outlying porches, the treatment of which is still severe, gives value to the enrichment of the triple arcades above, which is still further enhanced by the absolute plainness of its enclosing wall. The terminal piers of the arcades are of an ample breadth, and the sense of abutment is additionally given by the filling out of the angles below. Another source of effectiveness is that while the outer angles of the building are opened into porches, the basement is kept solid at the corner towards which the arcades converge. The narrow slits between and outside of the openings of the basement really emphasize, even while they relieve the massiveness of the wall, and there is a curious and subtle felicity in the placing of them. The relation of voids to solids in this work seems to me almost perfect. It is so perfect that in block, without an ornament, this would be an impressive and distinguished building by force of mass and outline. It is so when it can be seen only in outline. The highest merit of the detail is that all of it tends to promote this inherent expression, and is far more valuable in its place than out of its place. In adjustment and scale it has been studied with complete success with reference to its situation and its material. I have mentioned among the defects of the designer's earlier work a tendency to excess in scale of the detail. This

has here been entirely corrected without falling into the opposite fault of undue minuteness. Whether it be the frieze of the first story, the balustrade above it, the modelling of the upper openings, the enrichment of the spandrels or the rich modillioned cornice, its adjustment has been so successfully studied that it takes its place perfectly, and is "just right." No minutia has been neglected. Even so small a matter as the rubbing instead of the commoner tooling of the surface entirely removes the impression of coarseness which the Tuckahoe marble is apt to give and adds very greatly to the total effect. Another trifle is worth noting as an illustration of the author's discretion, and that is the treatment of the granite buttresses that flank the steps of the entrances, where there is a suggestion of a cushioned seat. No architect needs to be told that this belongs to a class of effects that very easily become outrageously vulgar, but this is managed with so much discretion and reticence as to be very attractive.

The outcome of the study that has been devoted to this work, in composition, in modelling and in ornament, is what I imagine most students would agree in calling the most classical piece of architecture in New York. I can think of no other which gives quite the same sense of lucidity and purity, of precision and "just rightness." And it is especially to be noted that this result has been attained in a building in which the design is an exposition of the structure, in which none of the forms are borrowed from the antique, in which the detail is original, and which is an example of Romanesque. To attain in free architecture the distinctive charm of classic architecture to gain purity without losing expressiveness is a rare, if not a unique achievement in contemporary work.

In the building for the Bar Association, the architect has not repeated this ambitious and successful attempt at a refined and "elegant" Romanesque. He has undertaken the more usual task of attaining a classical expression by the use of the classic forms, has forborne to devise his own



Chicago, Ill.

DEARBORN STATION.—1886.

Cyrus L. W. Eidlitz, Architect.

detail, and has contented himself with selecting from the repertory of antique details those which best suited his purpose. Even with this renunciation, the problem was by no means so simple as that of the Bank for Savings. A library, with its dependent book-room, superposed upon two tiers of subordinate apartments, is manifestly a much more complicated scheme than a single room with its dependencies, and in it classical simplicity is correspondingly more difficult to attain, especially if an expressive treatment be adopted,

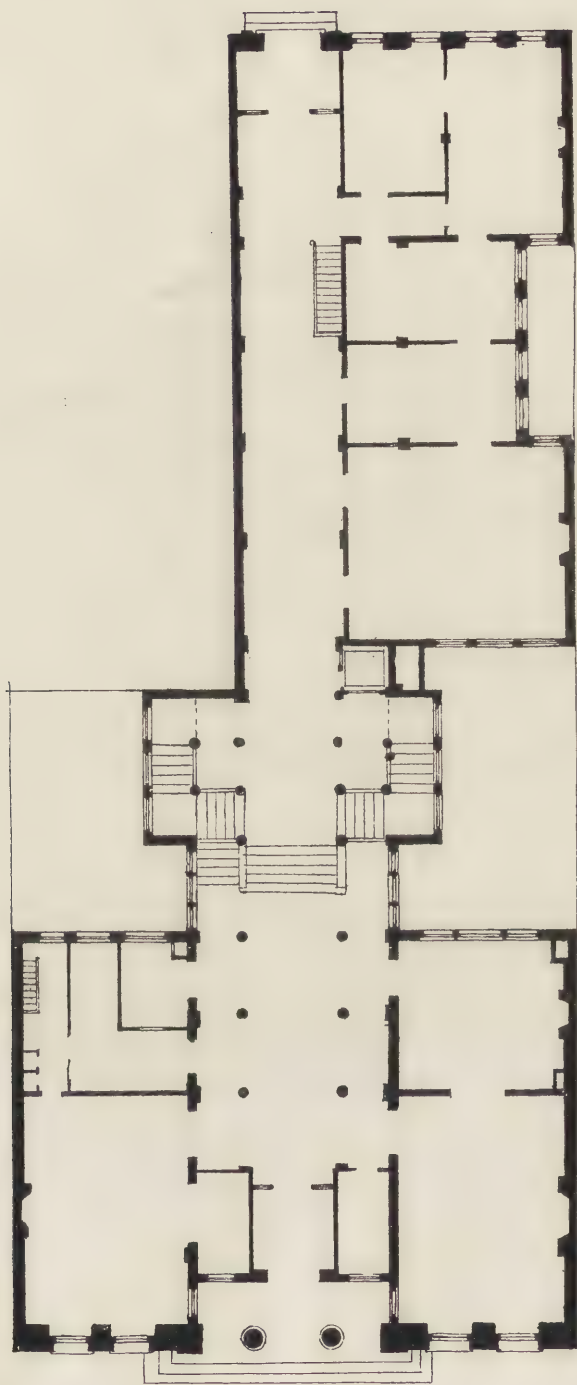
as has been done in the principal front of the building for the Bar Association. The library and the stack-room are distinguished and united by the main order, the clerestory of the library is indicated in the triple opening above, and the subordinate stories below are treated with appropriate plainness, the chief feature by which their plainness is relieved being the powerful and impressive Doric entrance. The chief task of the modern architect who employs the antique forms, after the choice of such as are most appro-



44th Street, New York City.

THE BAR ASSOCIATION BUILDING—1896.

Cyrus L. W. Eidlitz, Architect.



Scale 0 5 10 20 30 40 ft

THE BAR ASSOCIATION BUILDING.



Ramapo, N Y.

RESIDENCE OF J. O. DONNER.

Cyrus L. W. Eidlitz, Architect.

priate to his scheme, is the adjustment of them in detail so as to tell best, to be effective without being excessive, in a word, the fixing of their scale. This adjustment is by no means easy, no easier in compilation than in original design. In scale it will be agreed that the classic ornament employed here has been adjusted to its place with entire success, alike in the columns of the entrance, in the anthemion frieze that marks the main division of the front, in the principal order of pilasters, and in the rich cornice.

The lesser front on Forty-third street is of an extreme simplicity, being only the face of an assembly-room and of the basement through which access is gained to it, and here a classical simplicity is comparatively easy of attainment. It has been attained with great success. A colonnade carried upon a plain and solid base and crowned with a rich modillioned cornice, these are the elements of the front, and they have been composed with perfect simplicity and to a very happy result. The colonnade gains force not only from being set upon a plain wall, but from its own solid flanks of wall, relieved only by the inscribed panels at

the sides. There are few street fronts pleasanter to look at, and I fancy that the most rigid classicist will be inclined to admit that the departure from exact symmetry in the placing of the entrance at one side adds to the effectiveness of the design.

The architect is much to be congratulated upon the enlightened liberality of his clients, which has enabled him to distribute virtually into two buildings the two principal requirements of their association, the library and the assembly room, and even to front these upon different streets, instead of forcing him to crowd them upon the same area. The result is not only of advantage to the exterior architecture, but it gives to the interior the sense of amplitude and spaciousness which is necessary to a really monumental impressiveness. As will be seen from the plan, it has enabled the designer to open a vista of 200 feet in the main corridor of the ground floor. It has enabled him also to give effective dimensions and an effective disposition to the library which occupies the whole area of the wider building. The arrangement of nave, aisles and clerestory, suggested by the neces-



THE TOWNSEND BUILDING—1896.

Northwest corner Broadway and 25th Street, New York City.
Vol. V —4.—8.

Cyrus L. W. Eidlitz, Architect.



New York City.

RESIDENCES ON WEST 86TH STREET—1890. Cyrus L. W. Eidlitz, Architect.

sities of the case, has been carried out on a monumental scale and with monumental material. We have very few interiors so impressive as the nave of this library will be, with its actual length of 90 feet greatly increased to the eye by its division into seven bays marked by the granite shafts, with Ionic capitals and bases in marble, that support a heavy entablature of stone work, especially when the effect of the architecture comes to be heightened by color-decoration. It is one of its designer's most noteworthy successes.

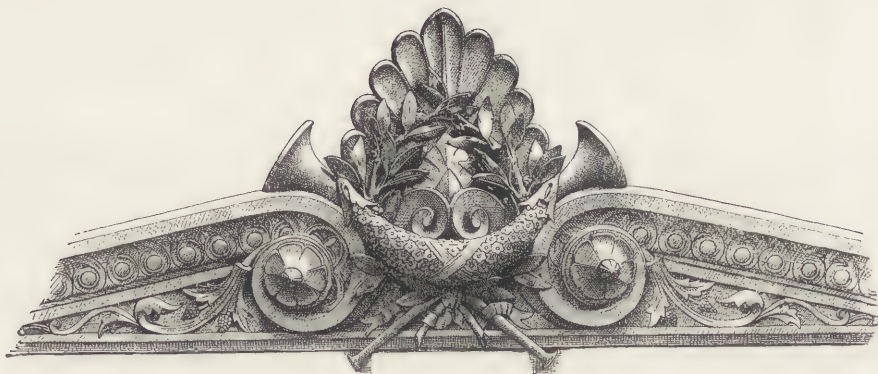
It will be agreed, I am sure, that the work herewith shown is not only very interesting, but that it is progressively interesting, and that the designer has advanced steadily in mastery of form and in grace and spirit of detail. It is worth pointing out, too, that the work is interesting in great part because it is so reasonable. There are among the buildings here illustrated, no freaks, no eccentricities, no straining after novelties, but everywhere the attempt to satisfy the real requirements of the case in hand, and to conform the architecture to them. In at least two instances we have seen

that requirements which might have seemed at first sight architecturally impracticable have issued, after faithful study, in a much more forcible and a much more original architectural expression than could have been obtained by the endeavor to evade or to ignore them. It is this reasonableness and the increasing power that comes of it, which makes the architect's work exemplary as well as interesting, and it is this which adds force and point even to the decorative detail. I do not mean, of course, that the power of design shown in the best of Mr. Eidlitz's detail is other than a gift, or that an ungifted architect could acquire it by taking thought. But I do mean that the constant consideration of appropriateness adds to purely decorative design, abstractly graceful and effective as decoration, an additional charm of craftsmanship. When a talent for decoration is applied to the idiomatic treatment of material, as is so eminently the case with the best examples here shown of Mr. Eidlitz's work in moulded and baked clay, the result is a positive and valuable addition to the existing repertory of architectural detail.

Montgomery Schuyler



PANEL—RACQUET CLUB.



NEW BOOKS.

A Cyclopædia of Works of Architecture in Italy, Greece and the Levant. Edited by William P. P. Longfellow. Charles Scribner's Sons, 1895. 4to., pp. xxxii., 546.

The attempt to present in one volume, even a large one, an encyclopædic account of the architecture of Italy alone would be in a sense a vain attempt. If we suppose three-quarters of the present volume, or even four-fifths of it, to be devoted to Italy we shall still find that a book of less than 300,000 words cannot include all the Italian buildings which the student of architecture ought to have access to, nor a half of them, nor a third of them; and, moreover, it will appear certain that even the buildings which are named must be described inadequately. The task, which it seems right to describe as an impossible one, has in this instance been put into the best possible hands. Mr. Longfellow, the editor, has long been known as one of the most scholarly and judicious of modern students of architecture, and he has been engaged upon this work for several years. Mr. Chas. A. Cummings, whose work as an architect is known to all who know Boston, and who has retired from the active practice of his profession to give only the more attention to the theory and history of his art, has furnished "the greater number of the articles on the mediæval and later architecture of Italy." Prof. A. L. Frothingham, Jr., of Princeton College, this year employed as first Secretary of the American School for Classical Studies in Rome, has given a number of articles concerning Italian mediæval churches. This subject Prof. Frothingham has made peculiarly his own by original researches into the first appearance of pointed architecture in Italy; the dates of the earliest monuments and the probable

causes of the appearance in Italy of this essentially northern style. The classical part of the book is the work of the late Thomas W. Ludlow, for many years the Secretary of the Managing Committee of the American School of Classical Studies at Athens and editor of the "Century Dictionary" in the Department of Architecture; in connection with which last-named publication he has left behind him a piece of work of extraordinary thoroughness and accuracy; unequalled by any special dictionary of architecture.

A bibliography is given in which the books named are classified under General Treatises; Classical Architecture, arranged under subtitles; then Italy, arranged in the same way; and, finally, the countries east of Italy. This bibliography is, of course, chiefly the work of the specialist writers and the editor. Prof. Harold M. Fowler has aided in the classical part of this since Mr. Ludlow's death. Such a bibliography never satisfies the student unless it is so complete that he can think of few important books which are not contained in it, and the present one has no such pretensions. A preliminary note, indeed, alludes to difficulties in the way of compiling in America such a bibliography; difficulties which it is safe to say are not so great as here indicated. The attempted classification also is one which cannot be maintained without the repetition of book titles under different heads. Thus the especially important work by Francis Cranmer Penrose on the "Principles of Athenian Architecture" is mentioned only under General Treatises, and this fact has caused an English critic to state that the book is not mentioned at all. Indeed, there are

many omissions which it is almost as hard to explain as the omission of Penrose would be. A Glossary of architectural terms is also furnished; brief, but probably sufficient for such a work, in which, of course, the technical terms need not be very numerous. The Preface is an admirable piece of careful premonition, in which some of the many and seemingly insuperable difficulties of the task are set forth. The reader is warned most properly, most wisely, to beware of exact statements as to measurements in buildings, as to dates, and even as to the names of buildings which often change. The matter of transliteration and orthography is alluded to and its prodigious difficulty suggested. The articles themselves which are descriptive of the buildings are models of conciseness. The requirement being, in every case, a description which can be "understood of the people;" this requirement has been met, in so far as description of a work of art can ever be comprehensible. In short, the work has been done as well as such a piece of work will ever be done; it has been done with wide knowledge, sound judgment, insight, patience and conscientious care. If, then, in giving an account of what the book actually is this article may seem unreasonable in pointing out that which is absent or deficient, let it be clearly understood that the book could not be better unless it were bigger. Such errors, or what seem to be errors, as will be alluded to are such as can hardly be excluded altogether.

The book is entitled a "Cyclopædia of Works of Architecture" rather than of architecture, more generally, because it does not deal with the mathematical or mechanical principles underlying the art of building, nor the principles of that application of fine art which turns building into architecture; and also as being a work of geographical limitations, dealing with individual buildings in places named, and not with groups and classes of buildings, nor with styles. It follows that the buildings contained in the countries named are the sole subject treated. Under any name of a town there are given the names of what are thought the most important buildings in that town, and under each of these titles a description of the building named. Thus, if we open the book casually at Assisi we find named in alphabetical order the Cathedral, the church of S. Francesco, the convent of S. Francesco, the church of S. Maria degli Angeli, and the portico of the Roman Temple. There is, however, no mention of the church of S. Maria della Minerva, except that the Roman columns now form part of it; none of the so-called *new church*

built in 1615, nor of S. Apollinare with its pretty campanile, nor of the chapel of the hospital; and none of the interesting fountain built by Galeazzo Alessi, nor of the fascinating Loggia of the thirteenth century, called *Monte Frumentario*; nor yet of the early Gothic church of S. Chiara, nor of that of S. Pietro, although in each there are interesting architectural features; nor of some early mediæval houses which are typical in their way, nor of the interesting tower called *Torre del Popolo*; nor yet of the two cloisters of S. Francesco, the smaller Romanesque one and the larger two-storied one of the Renaissance. For the purpose of this inquiry into the relative completeness of the work Assisi has been taken altogether by chance. In this case it might be urged that nothing of supreme importance to students has been omitted. It is when the same examination is gone into with regard to a very important town that the matter becomes weighty, and that the reader has a right to ask what a cyclopædia should be. To take, for instance, Venice, and to count up the missing buildings, is to reach some surprising results. It is not merely that no mention is made of the *Vere da Pozzo* or cistern-heads, which are so characteristic, and which certainly deserve to be considered architectural, nor that the courts of houses, large and small, with their admirable out-of-door staircases are left unmentioned, nor that the many exquisite door-pieces and gateways leading into court-yards all over the city, from the *Abazia della Misericordia* at the far North and the gate which has the sculpture of St. Martin and the Beggar at the far East to that of the Palazzo Foscari are all disregarded; nor that there is no allusion to the peculiar Venetian feature of a permanent connecting link between two palaces, as shown in the Madonna relief over the Ponte del Paradiso and in the curious light arch thrown across the Calle Bon at S. Severo; nor that the bridges themselves, of which some few are still ancient and many are interesting, should be ignored, nor that room is denied to the very numerous specimens of Byzantine, Gothic and Renaissance architecture throughout the town—here a row of five windows with sculptured spandrels, as in the celebrated "Four Evangelists Group" or the beautiful cusped arches which form an arcade on the Campo S. M. Mater Domini, and there an entrance doorway with its associated windows, as at the Corte del Remer opening on the Grand Canal, or some windows still left in an otherwise modern wall like those on the canal behind the Foscari Palace, perhaps the oldest architectural fragments

in Venice ; all this is not very surprising. The absence, however, of any mention of the superb Gothic palace at S. Benedetto and of the equally magnificent one called Palazzo Priuli with its exquisite angle-window and of the two palaces on the Campo di S. Polo, so like to the Palazzo Badoer Participazio mentioned in the book that they are almost its doubles, and of the huge Palace Marcello at S. Nicolo da Tolentino and of the palace on the Fondamenta delle Zattere and of the palace which forms the Hotel Danieli at the South and of the Palazzo del Camello far away on the northern edge of the city ; this, indeed is calculated to make one think. The above are all Gothic palaces and the list might be greatly increased. There are, indeed, small houses in which people live comfortably, of which the principal windows and balconies are of fine Gothic type. Two of these at least have the names of private schools upon their front, but their exquisite and unrestored cusped arches of the latest Gothic fashion are none the worse for that. If now we consider the palaces of the Renaissance epoch and of the times following, we find a list of those not named in the book before us which is indeed formidable. The wonderful little gem on the Rio della Fava with its corbelled-out front overhanging an alley, the house with the spiral staircase in an open cage on the Corte del Maltese, the Palazzo Bianca Capello at San Aponal, the Palazzo Widman at San Canciano, the Palazzo Labia where the broad Canareggio takes its origin, the splendid Palazzo Grimani at San Polo, the Palazzo Angarani-Manzoni of rich, early Renaissance design, the Palazzo Vendramin at Santa Fosca with its exquisite Renaissance doorway, the Palazzo Bernardo on the Grand Canal, the Palazzo Tiepolo and the splendid late Neo-Classic palaces Pisani at S. Stefano, Frangini and Grassi ; all these, to which two score of minor importance might be added, are of architectural value and are typical each of its own epoch and style. The important church of S. Pietro di Castello which was the cathedral of Venice until within a few years, with its Palladian front, its seventeenth century interior and its attractive campanile of a severe renaissance architecture, it has been found necessary to omit. S. Simon Piccolo of eighteenth century columnar architecture ; St. Sebastiano of the sixteenth century with interesting architectural interior and well worthy of study apart from its famous paintings ; S. Trovaso, to give its Venetian name to a typical Palladian church, more properly called S. S. Gervasio e Protasio ; S. Toma, a late neo-classic structure of two dif-

ferent epochs ; S. Maria del Rosario of the Gesuati, also of the eighteenth century ; Sta Maria Formosa, a late renaissance church of great interest ; S. Georgio dei Grechi, with its delicately designed sixteenth century front and three water gates, and its slender campanile, which inclines a little outward over the canal ; S. Lorenzo, with its fine interior of enriched sixteenth century Corinthian and its unsurpassed architectural high altar ; S. Giustina, with its colossal order of composite columns and the admirable working in of three tombs as part of the facade ; S. Barnaba, also adorned with a colossal order, but more severe in style ; S. Giuliano, one of the finest designs of the great Sansovino and a piece of severe Roman Doric ; S. Fantino, S. Fosca, S. Giovanni Elemosinario and S. Maria Mater Domini, presenting four admirable modifications of the orthodox renaissance interior ; S. Giobbe, with the loveliest renaissance arabesque ornamentation in Venice, abundantly and consistently applied both within and without ; and, on the Fondamenta delle Zattere, the little church *degli Orfani*, with details of architecture and sculptured ornament worthy to be compared to those of S. Giobbe—all these are to be sought elsewhere than in the cyclopædia. This list of pieces of architecture important to every student is not the compilation of any local antiquary ; it is the partial result of a traveler's notes which themselves are being far from complete. There should be added to it many such exquisite pieces of antiquity as S. Gregorio, with its quaint cloister, its strangely rich and florid doorway and windows on the canal, and its late Gothic choir ; and the curious early cloister, rather Romanesque than Byzantine, which is to be found behind the Ducal Palace by those who will ask for the Criminal Court at the Ponte di Canonica. And it is, moreover, to be kept in mind that large buildings which have been continually in the hands of successive generations of rebuilding and restoring possessors are not single structures, but combinations of many parts. Thus the western front of the Ducal Palace is a much later copy of the southern front, both in its general design and largely in its details ; and the singular return of the southern front along the eastern wall on the narrow canal is also a thing to consider gravely. Moreover, and not to quit the Ducal Palace, when sculpture reaches the decorative importance of these angle groups and iconographic capitals, that sculpture needs to be specially weighed with regard to its relations to the whole design ; and there are many buildings

in Venice of which this needs to be said. Concerning the Loggetta of the Campanile this is said in the Cyclopædia, and said well; but generally we miss the needed critical remarks upon associated sculpture. As for the architectural tombs, altars, aumbries, fonts and the like, with which churches are filled, there is little to be found in the pages under consideration.

It appears then that for architecture of the mediæval and later styles much more has of necessity remained unnoticed, even of important and instructive monuments, than there has been room to describe, and that, moreover, the descriptions are regrettably brief. The preface points out that buildings of classical times are treated more fully than those of the modern world, and undoubtedly this is true, as, indeed, the fourteen pages devoted to Pompeii show abundantly. Herculaneum, however, is not treated with any fullness. The treatment of Segesta, Paestum, Akragas, under the head of Girgenti, is all that could be desired, except as to such points as this, that the great temple of Zeus at the last named place has had no justice done to the strange peculiarity expressed in the text in the compound word pseudo-peripteral. The temple at Cori ought not to be called Roman Doric in style; a great chance at describing an almost unique building was missed when those words were used. The information given about the two temples in and near the ancient Metapontum seems to be as complete as it could be. The remains of ancient buildings at Susa, Ancona, Aosta, Benevento and Verona are completely described in so far as they are accessible and visible. The classical buildings of Rome seem to be adequately described; it would be difficult to go farther without invading the domain of speculation. The description of the basilica of Constantine is quite a model of compressed writing. What is said of the arch of Titus reminds one of a short-coming which all guide books share, the absence in such descriptions of the needed historical account of the monument in its later days. Who knows now that this triumphal arch, as it stands, is half a rebuilding of the years following 1822? As regards the completeness of treatment of the whole classical side of Rome, it appears to be all that could be asked, always excepting the matter of conjectural restoration alluded to above. It must have been hard to the editor to omit a restored plan of the Forum of Trajan.

Outside of Italy the circumstances are different. The buildings to be described are comparatively few, and will remain few so long as archæologists

have no money to dispose of and cannot really explore those lands which once were civilized and are now or have recently been Turkish. What is said of the buildings at Athens, Epidauros and Olympia seems to be excellent and is nearly always up to date, no slight merit. Less important sites, such as Orchomenos and Oropos and Thouria and Thoricus are also thoroughly well treated. What is said of the pre-historic buildings of Tiryns and Mycene is also good and full enough. And finally, the articles concerning the sites of ancient buildings in Syria and Asia Minor are so numerous and so much better than can be found elsewhere outside of the technical journals and the monographs—so much better, in fact, than can be found anywhere else in handy form—that one is willing to believe them models of their kind.

About two hundred and seventy illustrations are given, nearly all of which are photographic views, very well chosen as to the building and the point of view. There are a few plans of buildings and some of groups of buildings, and it might be wished that there were many more plans. The volume is a beautiful piece of book-making except for the glossy paper which American half-tone prints seem to require and for a very ill-designed cover.

The Writings on Art. By Anna Jameson; in five volumes. Volumes I. and II., *Sacred and Legendary Art*, pp. xlvi. and xv., 800. Volume III., *Legends of the Monastic Orders*, pp. xxvi., 467. Volume IV., *Legends of the Madonna*, pp. xxiii., 372, edited with additional notes by Estelle M. Hurl. Volume V., *Memoirs of Early Italian Painters*, pp. xxiii, 281. Thoroughly revised and in part rewritten by Estelle M. Hurl. Houghton, Mifflin & Co., 1896.

Mrs. Jameson's well-known books on subjects connected with painting consist in chief of Volumes I. to IV. of this series as they were in their original edition, which works, the authoress seems to have intended to call, by the common title "*Sacred and Legendary Art*," each having meanwhile its special and separate title. The book contained in the fifth volume of this series has not been in very common use. It appeared many years ago; published first in a periodical of no critical value whatever and published in book form with few pretensions to thorough treatment either of the biographical or critical portions. Mrs. Jameson had not then any claim to be considered a specialist on matters connected with fine art nor indeed did she ever gain

much technical knowledge or much insight into art as it is known to artists and students of strongly artistic leanings. She was a writer of such semi-literary papers as "Social Life in Germany," "Characteristics of Shakespeare's Women" and the like, and when in 1845 this book on Italian painters appeared it was merely a sympathetic and affectionate essay upon a subject which the authoress knew little of. The new edition of this work, as stated in the editor's preface, contains a great deal of new matter, and has some part of the original text removed. Many editorial notes are also inserted and there are a large number of portraits, mainly reproduced from other books. The book will, of course, be found readable, but will be of little aid to students.

Very different is the case of the other works included in this set. Mrs. Jameson set herself seriously to describe the attributes of the sacred personages of the Roman Catholic Church in the middle ages and at the time of the Renaissance, and especially the manner of representing the different personages and their actions and the way in which one could be distinguished from another. No intimate knowledge of fine art was needed for such a study and her devotion, single mindedness and energy enabled her to produce these volumes in rapid succession between the years 1848 and 1852. Her own revision of the works in subsequent editions was not very extensive and she died in 1860, leaving some material for a further work on the same lines. Until now no revised edition has appeared. The present publication contains a number of emendations and editorial notes which have rather for their purpose the tracing of the whereabouts of the pictures referred to in the text. The main body of the work remains unaltered and indeed needs but little alteration as it is a very satisfactory and useful guide in the matter to which it especially relates; namely, the pictured legends of European painting from the fourteenth century down to the present time.

Catalogue of the Avery Architectural Library.
A Memorial Library of Architecture,
Archæology and Decorative Art. Library
of Columbia College; New York, 1895.
Octavo, pp. xii., 1,139.

This large and solid book is certainly as handsome a catalogue as has ever been issued. It has been printed from type by T. L. de Vinne & Co. on heavy and rough surfaced paper, and

contains several appropriate illustrations. The cost of the printing and binding has been entirely borne by Mr. Avery. The introduction which states this last named fact relates also the cause of the foundation of the library. It is a memorial of Henry Ogden Avery, who died in New York in 1890, at the age of thirty-eight. His parents, Samuel P. Avery and Mary O. Avery, established the library, under consideration, in memory of their son. Their letter making the first offer of the gift and containing the conditions of it is dated June 23, 1890. From that time until the beginning of the year 1895, the purchases went on, and the library now contains about 13,000 volumes. It is hardly necessary to remind the reader that books devoted to architecture and decorative art are of a high average of cost and beauty. Folios are vastly more numerous than in any other departments of study and it is generally true that the books, large and small, are filled with illustrations. The Avery Library is rich in books of local archæology, some of which are of great rarity, and it is perhaps little known how much useful information is contained in books written by the village priest or some small proprietor, which books seldom see the world beyond their narrow country side. The library has many of the admitted rarities; those books which are quoted at high prices on catalogues of well-known dealers; the works of the artists of the Renaissance, of their successors in the seventeenth and eighteenth centuries and those of the designers of furniture and decorative detail. The stand-bys of our youth, the orthodox books of Britton, Billings, Carter, Stothard, Fisher, Street, Shaw, Nesfield and the other Englishmen, and of their French and other continental congeners are here perhaps in complete representation. These important departments are, however, less important than the one which contains the modern books of photographic illustration allied with drawings from accurate measurements. If the reader will consult these columns in No. 16 of the *Record* p. 512, he will see named three or four of the very costly books of this class, books which "no library should be without," but which no private library can have. It may be stated without indiscretion that the Avery Library was founded that it might offer to students the use of these same costly books. There are also books of almost equal importance and of considerable, though less prodigious cost, such are for instance those recently issued in Germany and consisting chiefly of large Heliogravure plates, but having

also a text of some value in which are inlaid trustworthy plans. The latest books are almost necessarily the best, and no library ought to exhaust its funds in purchasing the old authorities when the next season's list is sure to include books which will supersede them.

The purchases have been made in general by the committee of purchase named below, but Mr. Avery has bought largely himself and has very frequently sent in books which the committee would hardly have felt free to buy. Besides the funds needed for the purchase and binding of the books, Mr. and Mrs. Avery have given \$25,000 as a fund to produce a permanent income, for periodicals, binding and the purchase of additional books.

A very complete catalogue has been made in duplicate, one set of the cards being kept by itself in the rooms devoted to the Avery Library, and the other arranged alphabetically with the general catalogue of the Columbia College Library. This card catalogue contains a very large number of subject entries. Not only the main subject of a considerable book has been thought worthy of entry but equally the subject of an article in a periodical or a paper included in the proceedings of a society. It was, however, decided when the printed catalogue was put in hand, to exclude from it these subject titles. Real completeness in such a matter is, of course, unattainable; there will always be some subjects or some titles or statements of subjects which the student will miss. Still it was thought that a certain approximate completeness should be reached, before that almost unknown thing, a subject catalogue in print should be undertaken, and it was felt that some months or years would elapse before such completeness could be assured. The volume before us, therefore, is arranged under titles and authors only.

The card catalogue has been prepared in the usual routine of Columbia College Library work, under the general direction of Mr. George H. Baker, the librarian. The heavy task of carrying the book through the press has been performed by Mr. C. A. Nelson. The Commission of Purchase for the books already obtained and those that are to come consists of the librarian, the professor of the department of architecture in Columbia College and the writer of the present notice.

The catalogue, forming a very handsome, thick, large octavo, has been placed on the book list of Messrs. Macmillan & Co. at the price of \$10.00.

London City Churches. By A. E. Daniell. With numerous illustrations by Leonard Martin. New York: Charles Scribner's Sons, 1896.

The churches of London City, that is to say, of the small tract of ground between the Tower and the site of Temple Bar and between the Thames and Holborn were interesting enough to have been spared from wholesale destruction. No one can wonder at the wrath of Londoners, at the pulling down within a few years of eleven of those churches which were built by Sir Christopher Wren himself. The introduction of Mr. Daniell's book gives this number as having "fallen victims to the Union of City Benefices Act," and states that four others had been removed between 1781 and 1845, when the Royal Exchange was built. This introduction gives some other figures that are of importance. Eighty-six parish churches were either destroyed or much damaged in the fire of 1666; twenty-one escaped the fire, but of these only eight remain, which really are worth naming separately, as follows: All Hallows, Barking; S. Andrew, Undershaft; S. Bartholomew the Great, at West Smithfield; S. Ethelburge, Bishopsgate; S. Helen, Bishopsgate; S. Giles, Cripplegate; S. Olave, in Hart street, and S. Catherine, Cree. Of the parish churches destroyed in the fire thirty-five were never rebuilt, as the parishes were united two or even three into one, but forty-nine were rebuilt by Sir Christopher Wren. After Wren's time thirteen churches were built by Nicholas Hawksmoor and others, but two of these have been removed during the last few years. There is just a little confusion about these figures as in the case where S. Botolph, Bishopsgate, built by Wren, after the fire was rebuilt in 1725-29.

For the traveler visiting London City the old churches which remain for his examination seem very small, unimportant, unarchitectural. If he is fresh from the continent of Europe, the small size and peculiarly irregular and undignified planning and disposition of so many of the London examples are apt to repel him. Nor does a more thorough examination tend to increase the traveler's respect for the buildings as monuments of stately performance; the very abundance of imitation vaults of wood and plaster hung from wooden roofs goes to class these buildings in his mind with the feeble modern structures which he may have left behind him at home, and to separate them from the solid and worthy monuments of the "better days of art." Two classes of persons only can

be expected to study the London churches with care and interest; those who cherish every vestige of old London in the semi-historical, semi-artistic way of the modern student and those who are occupied in the study of architecture as a thing of tradition and academic teaching. The spirit of the former class finds embodiment in the valuable series, published by the Society of Photographing Relics of Old London. Those photographs are of absorbing interest; and so are the half-tones in this book representing S. Botolph, Bishopsgate, S. Botolph, Aldersgate, and S. Botolph, Aldgate, provided always you are not asking for pure and refined art nor for stately and monumental buildings, but are prepared to enjoy homely fitness and the time-worn associations of history. Among the photographs published by the society there are, as there are in this book, pictures of buildings which have architectural value. The little drawing on p. 265 of S. Michael, Wood Street, that of All Hallows, London Wall, p. 307, and that of S. Mary at Hill, p. 238; the half-tone of S. Alphage, London Wall, and that of S. Mary, Abchurch, p. 224, give instances of buildings which have some value as pieces of successful proportion. In mentioning these we have avoided interiors and have tried to avoid churches designed by Wren. Of Wren's own churches, such exteriors as those of S. Andrew by the Wardrobe p. 122, S. Andrew, Holborn, p. 126, Christ Church, Newgate Street, and S. Lawrence, Jewry, are worth much study as being the attempts of a very skillful, sagacious and many sided man to design inexpensive churches in a neo-classic style. If the architectural beginner feels a doubt about the architecture of Palladio applied to small and cheap churches, he may study those above named and also S. Magnus, London Bridge, and S. Mary le Bow. Attempts at a somewhat freer treatment of classical architecture are to be seen in S. Nicolas, Cole Abbey, and S. Mary the Virgin; perhaps also All Hallows, London Wall.

As to the interiors they are spoiled for serious study by repeated alterations and restorations and also by their inferior material putting on the forms of solid masonry. No student ought to sketch or measure an interior built up and boxed out with panelling and plastering, because it will mislead him dreadfully as to what is feasible and what is beyond his reach when he himself comes to build. Thus in the print opposite p. 142, if we assume that the vaulted roof of S. Bride, Fleetstreet, is lath and plaster, we have in it an instance of a trap laid for the youth-

ful architect who might well be trying to turn real vaults of similar proportions on solid supports like these. Among the churches of recent times, there are some whose interiors really are attractive, namely, those with flat ceilings like S. Lawrence, Jewry, and in a different form S. Mary, Woolnoth. And finally a word must be said of the churches which remain from the years before the fire of which this book, we think, possesses the best record easy of access. Such churches are All Hallows, Barking, and S. Giles Cripplegate, and especially S. Helen, Bishopsgate, all three late Gothic and the last named of peculiar value; S. Bartholomew the Great, which is really an important piece of Romanesque architecture, and S. Catherine, Cree, built in 1631 in a mixed style, and with a plan well worthy of study.

The book before us is a piece of careful and loving study containing a great deal of valuable information made available by two full indices.

The Art of Velasquez. By R. A. M. Stevenson, London: George Bell & Sons. New York: Macmillan & Co. 1895. 4to., pp. ix., 123. Ten photo-gravures and forty-three full page half-tones.

This remarkable book is to be considered in two lights. It is two books as different as possible each from the other; as different, that is to say, as two books on the same subject can be. In the first place it is to be regarded as illustrative of Carl Justi's epoch-making work on Velasquez. The first three chapters deal with Velasquez himself, his life, his surroundings, the display of his paintings in Spain and elsewhere, and what the paintings themselves show of the changes in his art as he grew older. The very numerous large pictures are to be considered, in the first place, as illustrative of this part of the work. It is true that they are not always referred to in the text as to their placing in the volume and that one's penciled reference on the margin is called for; but there can be no mistake as to the pictures described and criticised, and text and plates together give what Justi's celebrated work could not give. In this respect too the book is a picture gallery, containing as it does fifty-one pictures from the Prado Museum at Madrid, of which seventeen are photo-gravures of as good quality perhaps, and of as great brilliancy as untouched negatives can give, the dark old pictures refusing of course to give up all their secrets. Both these and the half-tones are entirely trustworthy, and it is hard to say whether the portraits or the pictures presenting groups of men and varied

action are the more attractive. Photographic prints from these Madrid pictures can be got of Laurent, no doubt, but they are no better than those which are offered the reader here. One fancies, following the writer's thought as expressed on p. 17, that even these dark reproductions confirm what he says of the relative value of pictures mentioned, and that *The Spinners* is shown indeed to be the equal of any picture in the world. Beside the Prado pictures, there are five from the National Gallery in London, including that marvelous portrait of Philip IV. as an old man which is to be compared with an almost exactly similar portrait in the Madrid collection; this also contained in Mr. Stevenson's book. There are also three admirable pictures of the Louvre Museum, one in the Dulwich Gallery and one or two selected from those in private hands for access to which the reader has double reason to be grateful. The photo-gravure of the head of the Madrid "*Æsop*" on a large scale, to be compared with the half-tone No. 38, which gives the picture in full, is something to be especially observed. The exceptional composition, *The Coronation of the Virgin*, is also to be noted as wholly out of keeping with other works of Velasquez which make up his noble reputation. The few words given to it on p. 68 are all that it needs to properly characterize it.

In the second place this book is a treatise on painting, in which the art of Velasquez is taken as the highest known achievement of man in the direction of pure pictorial fine art as distinguished from story telling or appeals to literary, social or religious sentiment. The writer is, one may say, eager to explain that he has not here said the last word about Velasquez; that the influence of Velasquez upon art is still young, that few persons other than painters enjoy Velasquez, or "rightly estimate his true position in the history of art," that he, the writer, does not pretend to have settled his own opinions about Velasquez. There are, however, it appears, certain general principles of art, concerning which, the writer has reached a definite conclusion. He has thought much about painting and has satisfied himself that "the true artist's thought is of his material (let us say, in this case, oil painting) of its beauties, of its limitations, of its propriety to the task proposed;" that the modern idealist who seems to hate matter, the visible, the real and craves the spiritual and non-material has no business to

choose "painting or sculpture, the most material, the most tied to representation of the arts." In the work of Velasquez Mr. Stevenson finds no base reality, and he finds confirmation in that body of painting of the truth that "the common place lies only in the method of a mean, a small and inartistic eye. It was not only his immediate subjects, but the whole art of seeing that Velasquez dignified in his paintings."

There are passages, pages long in this work which are strictly essays on the art of painting as our author understands it, but these are wrought into the body of the criticism on Velasquez, which makes up the whole work from p. 37 to the close. It is not at a time when the work of Edouard Manet, Claude Monet and Hilaire Degas has become well known to the frequenter of picture galleries, that anything in the nature of a sneer is to be feared when impressionism is named. The art of putting upon canvas the painter's view of nature or, in other words, the impression which nature makes upon him is the oldest of arts, and it would have frightened no one thirty years ago to have said that this art was impressionistic. Twenty years ago the noun and the adjective had become terms of scorn and loathing in the mouths of most writers and talkers about art, at least in the English speaking world. Now that epoch in its turn has passed; the word impressionism has taken on a new and more limited meaning in addition to its older and more general meaning, but it is no longer a term of reproach, except with those who talk about pictures without looking at them. Therefore it is that Mr. Stevenson is able to give up the whole of his tenth chapter to a study of impressionism; and that without fear of misunderstanding by those whom he would wish to have understand. Velasquez, he finds, is that master whose work contains realism in its highest sense and impressionism in the form in which a very great artist alone can give it. Velasquez, he finds, is the man whom the modern world needs the most to study; for having fairly talked out the subject of painting as seen on Italian canvases it should now go to this, the latest of the great masters and the one who, the most of all, worked without the control of irresistible tradition. The book is so interesting that the reviewer who writes under the influence of its first perusal must be careful lest an undue expression of enthusiastic approval should commit him to a too complete acceptance of all the conclusions drawn by the author.

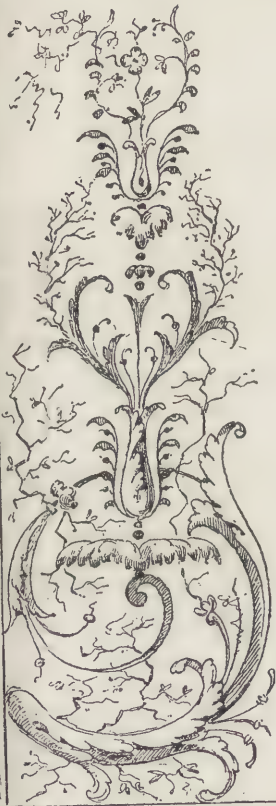
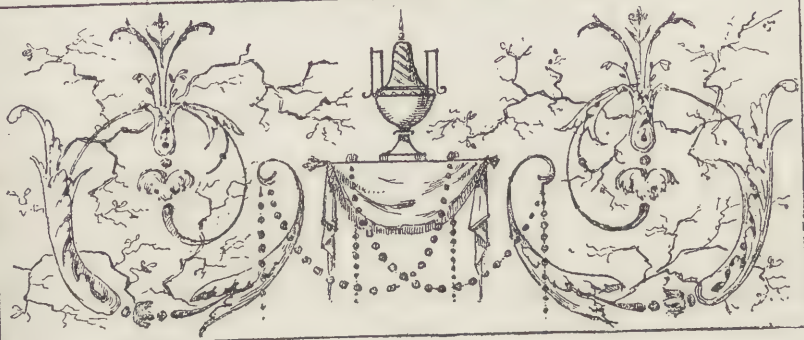
Russell Sturgis.

- Motive Powers and their Practical Selection.* By Reginald Bolton. New York: Longmans, Green & Co. pp. 257.
- Egyptian Decorative Art.* A course of lectures delivered at The Royal Institution. By W. M. Flinders Petrie, D. C. L. New York: G. P. Putnam's Sons. pp. 128.
- A Guide to the Paintings of Venice.* Being an historical and critical account of all the pictures in Venice, etc. By Karl Karoly. London: George Bell & Sons. New York: 66 Fifth Av., Macmillan & Co. pp. xxvii, 278. \$1.50.
- Modern Illustration.* By Joseph Pennell. London: George Bell & Sons. New York: 66 Fifth Av. Macmillan & Co. pp. xxv, 124.
- Painting, Sculpture and Architecture as Representative Arts.* An essay in comparative æsthetics. By George Lansing Raymond, L. L. D. New York: G. P. Putnam's Sons. pp. xxxiv, 431. \$2.50.
- Mechanical Drawing.* A manual for teachers and students. By Anson K. Cross. Boston: Ginn & Co. pp. iv, 197. \$1.
- Principles of Architectural Perspective.* By William H. Lawrence. Boston; Alfred Mudge & Son. pp. iii, 42, with plates.
- From the Black Sea through Persia and India.* By Edwin Lord Weeks. New York: Harper & Brothers. pp. xii, 437.
- Evolution in Art.* As illustrated by the life histories of designs. By Alfred C. Haddon. New York: Charles Scribner's Sons. pp. xviii, 364.

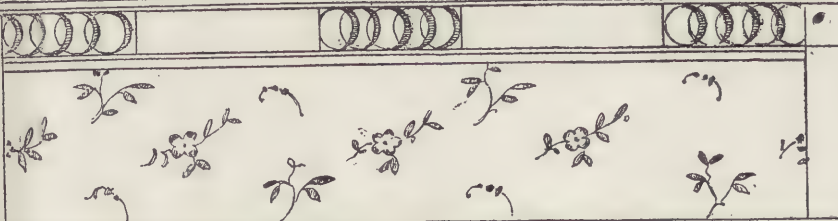
A CORRECTION.

We regret that the illustration of the interior of the "Chapel of the Good Shepherd," Blackwell's Island published on page 320, in the last number of this magazine, was not credited to Messrs. Withers & Dickson, the architects who designed that scholarly and charming piece of work.

EDITOR ARCHITECTURAL RECORD.



Technical Department.



A GREAT BUILDING FIRM.

AS our building operations become more expensive year by year it will be evident that new agencies must be employed to render them more effective. Only a few years ago the construction of a million dollar building was regarded as a great undertaking; but now buildings to cost several millions are frequently projected and carried to completion, and the same resources that constructed the lower cost building would not prove effective when applied to the higher priced structures. To work effectively more perfect mechanical appliances are required, a greater number of men are demanded, and there must be a more highly developed system in operating.

It follows on this change that great building operations are falling more and more into the hands of a few great firms—that have the reputation and the resources to meet the demand. Builders of limited means will always, of course, continue to work in a small way, and find their contracts among men of comparatively limited resources; but the great builders must serve the great capitalists, and we must expect to see a still greater consolidation of the building industry than we have yet seen. Large as we now find the cost of some of our building operations, it does not compare with the costliness of the structures which will be witnessed in a few years more.

Mr. Andrew J. Robinson, under the firm name of Robinson & Wallace, has been engaged in putting up buildings in this city for a period of over twenty-five years. During that time the firm has constructed some of the most notable structures erected in New York. Among the number are the six buildings of St. Luke's Hospital, which are built of granite, Georgia marble and buff brick; a residence on Fifth avenue for Mr. H. O. Havemeyer; a marble front residence for James P. Kernochan and a residence for John H. Inman, both of the latter on Fifth avenue. The firm is also constructing for Mr. H. O. Havemeyer a twelve-story building on the site of the old Metropolitan Hotel, Broadway and Prince street, and a twenty-six-story building on the old Herald Office site, Broadway and Ann street. The latter building will rise more than 300 feet above the level of Broadway, and at that elevation it will dominate above everything in New York, every building at least not furnished with a tower.

Not the least remarkable thing about the latter building will be the evidence which it furnishes of the rapid building changes in New York. Had the elder Bennett been told when he was planning his marble printing house, and investing a large fortune in its construction, that only a little more than a quarter of a century would pass before it would be torn down to give place to a twenty-six-story sky-scraper, he would have thought the man who ventured the prediction a lunatic. Yet it would have been true; and men who wondered at the cost and magnificence of the Herald Building when it was new will live to wonder at the startling altitude and magnificence of the architectural shape that rises in its place.

This building will be remarkable for something else besides its enormous elevation. It is to have a movable foundation. This will not rest on piles, nor go down to bed rock, as has been the custom

heretofore in the construction of large buildings. At a depth of about thirty-two feet below the curb good sand is found, on which the foundations will rest. The entire area of the building is covered by several tiers of riveted steel girders, forming a crib work, and the whole embedded in Portland cement concrete, which makes a compact, solid mass eleven feet in thickness. Under each of the forty-nine columns will be placed a hydraulic pump, by means of which any column which may happen to settle can be raised to its proper level, thus keeping the building perfectly plumb at all times, not only while it is in process of construction but after it is completed. This is a novel idea in architectural engineering and one which it is said the Eiffel Tower in part illustrated, but which has not been applied in any building intended for living or business purposes. It recalls the process through which Chicago many years ago was lifted from its low level and placed on higher ground. This plan greatly cheapens the cost of construction and also effects a considerable saving in time.

Robinson & Wallace pride themselves very justly on the promptness with which they execute any work for which they take a contract. As an example of quick building they point to the three-story and basement fire-proof structure just completed, at No. 42 Cedar street, for the Continental Fire Insurance Company.

This building is in every way a good example of first-class work; yet, within twelve weeks after the contract was signed, the building was completed and ready for the use of tenants, although the work comprehended the removal of the old buildings, the excavation of the cellar and the shoring and underpinning of the adjoining buildings. It would be difficult to surpass this record for dispatch; and it offers a recommendation for the firm which capitalists investing large sums of money in building operations will be ready to appreciate. Much money is lost each year by delays in construction, and, all other things being equal, the builder who is most prompt in the execution of his work is the most desirable builder to employ. The twelve-story office building for the Fidelity and Casualty Company, at Cedar and Church streets, a very costly structure, was built by Robinson & Wallace in a period of less than ten months, without night work, though the work was delayed about seven weeks by a strike. But of course such promptness in execution demands resources as well as drive, and this is another reason why the firm is trustworthy. They are able to do everything that they undertake both promptly and well.

Mr. Robinson was greatly interested in the ideas elaborated in the system of sewerage operated under the West patents, and put in that system for Atlantic City, and afterward, by a process of reorganization, acquired title to the whole plant. It comprises more than forty miles of mains and is connected with about three thousand houses and hotels. A well on the outskirts of the town receives the sewage through the principle of gravitation, and from there it is pumped to filter beds about two miles out on the meadows, where it is subjected to a process of filtration. The pumping capacity of the plant is equal to twelve million gallons a day

JAMES BAKER SMITH.

JAMES BAKER SMITH is a typical American business man—the successful business man who has been engaged from his youth up in wrestling with the hard problems of life and always managing to solve them to his own satisfaction; a man full of enterprise, of untiring activity, quick to see openings and to avail himself of opportunities; a man who is never at fault when his affairs approach that tide that taken at flood leads on to fortune, and what is as precious—the confidence of the public and the esteem of his business acquaintance.

The men who have been actively engaged in building during the last period of about a half a century are very few in number, but their work, consecutively reviewed, shows very vividly the improvements that have been made, both in artistic merit, in the styles of buildings erected and the immense advance made in the methods of constructions as a necessary result of the changes that have occurred from year to year. It is as true of industrial as of political revolution that new men come to the front and old ones are forced into the background, and it is saying a good deal for the few who are equal to holding their own in the period of fierce competition, and who not only hold their own in the eager strife that change engenders, but keep up with the bright and ambitious spirits that find their opportunity only in times of excitement.

James Baker Smith is one of these few. He not only was a prominent builder before the war, but he became more prominent after it, and is a prominent builder to-day. His success is due, as we shall show, to his ability to adapt himself to changing conditions and to make the most of them in the pursuit of a laudable ambition. His connection with the building trade of New York City began away back in the forties, even somewhat before the world went wild over the discovery of gold in California. When that tremendous rush West began Mr. Smith was learning the trade with the best known firm of builders of that day. What he learned may be judged from the build-

ings that were then characteristic of New York; what he had to learn can be conceived by comparing these buildings with those that have been erected in the last ten years. He was not quite twenty-one years old when he entered into partnership with the firm he had served, during his days of tuition and within the next five years he had erected numerous buildings of the classes then in vogue. If the buildings of that day were, as a rule, architecturally unpretentious, they were, however, soundly constructed and of substantial strength. Leaving out many unimportant ones, we may say that Mr. Smith built in this period of his business life the famous dry-goods stores for H. B. Claflin & Co. and for Bowen & McNamee. Stores in the swamp for Mr. Loring Andrews as well as Mr. Andrews' fine dwelling on 5th avenue. Also dwellings for Judge Edwards Pierrepont, Dr. Peckham, Thos. H. Faile, Mr. Burnham, Wm. F. Carey, W. H. Butterworth, Mr. Mortimore, Griffith Thomas and Dr. Delafield, all located on 5th avenue.

In the midst of the activity that a large business forced upon him, Mr. Smith found in 1860 that rest and relaxation from the cares that pressed upon him were absolutely necessary. At that time the Bahaman Government was advertising for plans for the erection of a large hotel at Nassau. This seemed to Mr. Smith a good opportunity for obtaining the respite he needed, and he submitted plans and estimates. Negotiations followed, and he finally undertook to build the hotel, thinking his work at Nassau would be completed in a winter and that it was better to take his recreation in the form of new work in another and more genial climate than to secure rest in complete idleness, which would soon become irksome to an active disposition. No doubt he was quite right, but his absence was to endure much beyond the limited period he had set; in fact, instead of one he spent six winters at Nassau. The people there evidently knew a good man when they met one. Mr. Smith built the hotel "The Royal Victoria," but he had hardly

begun upon it when he was beset on all sides to undertake the most extensive projects. The amount and nature of the work he did at Nassau and in its vicinity in these six years is a very striking testimony to his resources and ability. To summarize, this work consisted of : For the Home Government, building light-houses in the vicinity ; for the colony, planning and building the large new prison, the stone wharfs, bulkheads, etc., for the water front, and also for regulating the streets and walks ; for private parties, the erection of dwellings, ware houses, a theatre, and others too numerous to mention.

The fame of New York attracts people who have never seen it, with those who have lived in it and have gone from it the desire to return is irresistible, especially when they have found success there and are confident of doing so again. At the end of his six years' exile, Mr. Smith, in spite of the esteem and favor in which he was held at Nassau, found that he could no longer stay away from the scenes of his youth and his first triumphs in business, and he returned to New York, in better physical health than he had ever enjoyed before, with an enlarged experience, to take position among the pioneers of reconstruction who have since changed the face of the city beyond recognition by those who knew it only in ante-bellum days. The most important work with which his name is identified at this time was the Equitable Building at the corner of Broadway and Cedar street, which was the most notable commercial building in the city for some time. No better testimony can be given of his ability and the confidence owners had in his powers of organization than to state the fact that he was given entire control of the construction of this building by Mr. Hyde, the president of the Equitable Life Assurance Society, and the architect of the building. This was decidedly a professional triumph for a man comparatively young and a proof of the sterling qualities of his work. From this time on he was entrusted with the construction of one important building after another. A

complete list of his work is beyond our scope or space. Its chief items are : The Morse Building, considered more perfectly fire-proof than any other commercial building in the city ; Roosevelt Hospital, New York Hospital and additions, three Western Union Telegraph Co.'s buildings, Wells Building, Ditson Building, residence of Mr. Cornelius Vanderbilt, American Bank Building with its safe deposit vaults, Smith Building, Consolidated Stock and Petroleum Exchange, four additions to the Museum of Natural History, New York Athletic Clubhouse, Young Women's Christian Association Building, Railroad Men's Building for Mr. C. Vanderbilt, 138th Street Railroad Station, Freundschaft Clubhouse, Bar Association Building, Lithograph Co.'s Building, 4th avenue and 19th street, Adams Express Co.'s Building, 4th avenue, 48th to 49th street, and Columbia College Chemistry and Engineering buildings.

Besides this extensive constructural work, Mr. Smith has made a specialty of other that calls for no little engineering knowledge and skill, the reinforcing of heavy structures that have become dangerous or weakened from failure of their foundations, overloading or from other causes. To do this work efficiently requires more inventiveness and resource than to erect a building on cleared ground. The problems here involved are often very puzzling, but it need hardly be pointed out that a man, who in the course of a period of six years built theatres, hotels and light-houses is more likely to be fascinated than daunted by such tasks and is sure to find the right solutions. Two of Mr. Smith's undertakings in this line were the rebuilding of the foundations of the Cooper Union Building under the direction of Mr. Leopold Eidlitz and the Hon. Edward Cooper, and the carrying of the eight-story fire-proof Plaza Hotel on shores and renewing its foundations under the direction of Messrs. McKim, Mead & White. That they were carried out to an eminently satisfactory finish shows his skill, and their mention very fittingly closes a notice of the work of an energetic, skillful and versatile constructor.

CHARLES T. WILLS.

A MERE enumeration of the numbers of churches, palatial residences, office buildings and factories that have been recently added to New York City, or have taken the places of others that had ceased to meet the requirements of the times, would alone create surprise. These represent, not merely a vast expenditure of money, though the pecuniary feature is not without its astonishing side, but, what is much more to be prized, a growth of artistic feeling in our midst, an engineering capacity previously undreamt of, and an organizing ability that, judged from what it has already achieved, is without limit. New York City, as it stands to-day, is the work of men possessing all these attributes, so that no one can doubt that in her architects, engineers and builders New York possesses a body of very remarkable men, who are capable of continuing the work that has been begun, and of meeting the demands that will come year by year as the population, wealth and commerce of the city continue to increase.

Among the men who have taken a place in this rank of honor is the well-known builder, Mr. Charles T. Wills, who, though still a young man, has carried out a surprising number of important contracts, including the finest office buildings, club houses, railway depots, residences, apartment houses, churches, factories and theatres extant, and who to-day has many large contracts on hand for office buildings particularly. Mr. Wills was born near the close of the year 1851, in this city. His father, Chalkley J. Wills, was also a builder, but his son learned his trade with John T. Conover, one of the best known of the old-time builders of New York City, and by whom Charles T. Wills was early put in charge of important work. In the care and attention he then displayed, in the studious contemplation of every difficulty that he encountered, and his ingenuity in overcoming them, can be seen the causes of his present success. From his prentice days he has had a liking for the more serious problems of the structural art, and his ability to overcome obstacles that would be the despair of less able men, has secured him the favor and liking of the most prominent architects. It need not be said that a low bid is not the only requisite for obtaining a large building contract. No bung'ing or bunglers are wanted in such a work. The class of buildings that is erected in this city to-day is so different from any that were put up ten years ago that each one presents a new and individual problem. Hence it requires that the contractor shall be not only a man of unquestioned financial responsibility, but also one of superior organizing powers and fertility of resource to meet the difficulties that are sure to arise, and, for the reason previously given, cannot be foreseen.

We shall not attempt to describe all the work that Mr. Wills has done in the course of his career, or do more than allude to the most important of his contracts. It should be stated, however, before going farther, that Mr. Wills in the year 1879 entered into partnership with George Sinclair, and they carried on business as contractors and builders under the firm name of Sinclair & Wills for five years. At the end of this period the partnership was dissolved and Mr. Wills concluded

to "go it alone," a conclusion with which he has evidently every reason to be satisfied, because he is one of the most successful and leading builders of the city, and still does it. The work with which Mr. Wills' name will undoubtedly be best known in the future are the great office and other buildings he has put up in recent years, and in regard to each of which a story of intense interest to the building trade could be told. The Presbyterian Building on the corner of 5th avenue and 20th street, where he now has his offices, and completed on time in spite of delays through strikes, is his work. He was selected by the philanthropic founder of the Charities Building, corner 4th avenue and 22d street, to erect that important structure. The Scribner Building, Nos. 151, 153 and 155 5th avenue, was another of his contracts. In this instance the foundations presented an interesting problem, which was solved by employing the grillage system, for the first time in this city. He built the American Fine Arts Building on West 67th street, and the Vanderbilt Building, Nos. 15-19 Beekman street. The American Surety Building, corner of Broadway and Pine street, is one of his late undertakings. This building represents about all the difficulties a builder can encounter. Not only was it necessary to go down to rock for the foundations, but owing to the extent of the office space and the height of the building, the question of keeping the elevator space as limited as possible, yet ample for the service of the building, was a most difficult one, and it has been solved most satisfactorily. Few, too, can comprehend the amount of thought and ingenuity necessary to put into place the thousands of tons of bulky material that this building contains as it was received, because owing to the location of the site it was not possible to store any outside the work. The Johnson Building on the corner of Broad street and Exchange place, and the new building of the New York Life Insurance Company, have recently been completed by Mr. Wills, and he has contracted for the Bank of Commerce Building, on the corner of Nassau and Cedar streets, and the twenty-story building that is to be erected on the corner of Wall and Nassau streets by the Gillander estate, and which is to be the most sumptuous and complete office building in the city. The estate has a superb site, and will spare no expense in its improvement.

Of work in other classes carried to successful completion by this eminent builder, we may mention the handsome and complete Montauk Club House, Brooklyn; the Central Railroad of New Jersey's fine depot, at Jersey City; the new palatial Astor residence at 5th avenue and 65th street, one of the very finest in the city; Geo. F. Baker's residence, Nos. 256 and 258 Madison avenue; the Yosemite and Adelaide Apartment Houses, the first on 4th avenue and 62d street, and the second on the same avenue and 66th street; the Judson Memorial Church and buildings on Washington square, the Brooklyn Tabernacle, and of factories, Huyler's, American Bank Note Company's Building, Clark's Mile End Thread factory, and that of the Gorham Silver Company. Among his numerous new contracts we must not forget the building to be erected on the corner of 25th street and Broadway by the Townsend estate, which is to far outdo anything of its kind in that portion of the city, and will be an addition of which New York may be proud, notwithstanding the great improvements that have been made in structural appearances of late years. These undertakings not only show the extent of Mr. Wills' operations, but also the superiority of his work and the extraordinary range of ability he displays in it.

MODERN STONework.

DEVELOPMENT is never a single process. Advancement in one line demands a corresponding advance in other lines, and the history of building for the last twenty-five years affords a particularly instructive example of the fact. The invention of the elevator, the adoption of fire-proof materials, the introduction of the skeleton construction do not stand as so many isolated facts, but are, on the contrary, so many points of departure for the entire building craft. Each innovation has affected, more or less, nearly every department of the business.

It is scarcely necessary to illustrate this. Even to the ordinary observer the immense consequences which, for instance, the skeleton system of construction has had upon building conditions are obvious. Not only has it rendered buildings of great altitude possible, which, of course, has revolutionized building machinery and methods, but it has made the element of precision and accuracy in preparing the materials of which buildings are constructed, and assembling them together a matter of the utmost importance. A modern office building contains some ten thousand tons of material, all of which has to be gathered from the four quarters of the country, predestined and definitely allotted to a specific spot, so that at the right moment every stone, piece of terra cotta and so forth will fit promptly into its place in the rising edifice. The construction of a large building resembles the mobilization of an army more than anything else. Ultimate success depends upon the thoroughness with which the several departments (or, in the case of building, the several auxiliaries of the main contractor) do their work.

An interesting series of chapters will some day be written concerning the changes brought about by modern requirements in the several building trades. Probably in none have the changes been so extensive as in the mode of working stone. Even in the last ten years the advancement in methods has been very marked. Indeed, the stone business has been almost revolutionized by the introduction of machinery. A few years ago very little machinery of any kind was used in the dressing of stone. If primitive methods were not exactly in vogue, the appliances that *were* used were entirely inadequate for modern requirements. The introduction of machinery was absolutely necessary if the large modern office buildings, made possible by skeleton construction, were to be put together in the short time allowed by financial and other circumstances. One by one the old, tedious hand processes were displaced, and for them was substituted the rapid work of the machine, until to-day we have "steam stone works," a title which indicates clearly enough the triumph of modern power in this industry.

The large stone works of to-day is a very different affair from the old yard of ten or fifteen years ago. It is now completely under the sway of steam. Machinery does everything. Indeed, under present

conditions, it is only by extensive plants and by the investment of large amounts of capital that it is possible to meet modern building requirements. There are few such concerns in the country. In the East there are some fully equipped granite and marble enterprises, but in the freestone cutting industry the largest plant in existence is in New York City—that of B. A. & G. N. Williams, Jr., at the corner of Avenue A and Sixty-eighth street. It occupies over thirty city lots, where a very large number of men are kept busy continually with the aid of the most modern machinery. Large as these facilities are, they are insufficient to meet requirements, and the firm is just completing an extension to their works which will nearly double their capacity.

This firm has done some of the most notable work in their line in the city. Conspicuous among the buildings intrusted to them are such as the Constable Building, Presbyterian Building, Corn Exchange Bank, Manhattan Hotel, Holland House, Hotel Savoy, Church of St. Mary the Virgin, Residence of Chas. T. Yerkes, Broadway Cable Company's Building and many others.

Among the latest buildings secured by this concern is the splendid structure, the Bar Association Building, Forty-third and Forty-fourth streets, which is illustrated in this number in the article dealing with the works of Cyrus L. W. Eidlitz. This is one of the finest of modern buildings in the metropolis, and will be for years one of the chief ornaments of New York City. Mr. Eidlitz's design has attracted a great deal of attention from the happy way in which the architect has employed classical motives in a modern building. The entire fronts on both streets are of Indiana limestone. The vestibule of the Forty-fourth street entrance, which is a noble apartment, is finished in Tuckahoe marble. On the third floor is the library, which has received so much attention because of its ample dimensions and its monumental character. Two handsome granite colonnades divide the room into three aisles. The bases and capitals of this colonnade are of South Dover marble. The capitals are handsomely carved and add greatly to the artistic features of the room. Immediately above this is the architrave, which extends entirely around the room, which, together with the mantels on either side of the room, is of Indiana limestone. The effect of the stonework in this room is admirable, and very great credit has been given to Messrs. Williams for the manner in which they have carried out the work entrusted to them and assisted in successfully realizing the architect's idea.



AN HISTORIC FIRM.

NO name is more intimately, more *historically*, connected with the building art in the metropolis than that of Eidlitz. The founders of the name in America were Leopold and Marc Eidlitz, and it is worthy of note that every male member of the family for two generations has been intimately connected with architecture or building in some form. Marc Eidlitz was born in Prague, Bohemia, in 1826, and attended the common schools of his native land until he was twelve years old and circumstances forced him to look about for a livelihood, as well as a career. It was not, however, until he was twenty-one that he determined to seek his fortune in the United States. In 1847 he arrived on these shores, and having decided to enter the building trade, he undertook, despite his age, to apprentice himself to a mason builder for a term of four years, that he might acquire a general proficiency in the craft.

He began to rise rapidly. Before the end of his apprenticeship he had been advanced to the position of foreman, and in 1854 he commenced business on his own account.

From that year onward the firm has been closely connected with the development of the building trade in this country and has an experience which is unique.

It has always been the principle of Marc Eidlitz & Son that cheap work and good work could not be synonymous, they have therefore never been identified with the inferior grades of building. Their name as contractors of a building is a guarantee that it is of the first quality.

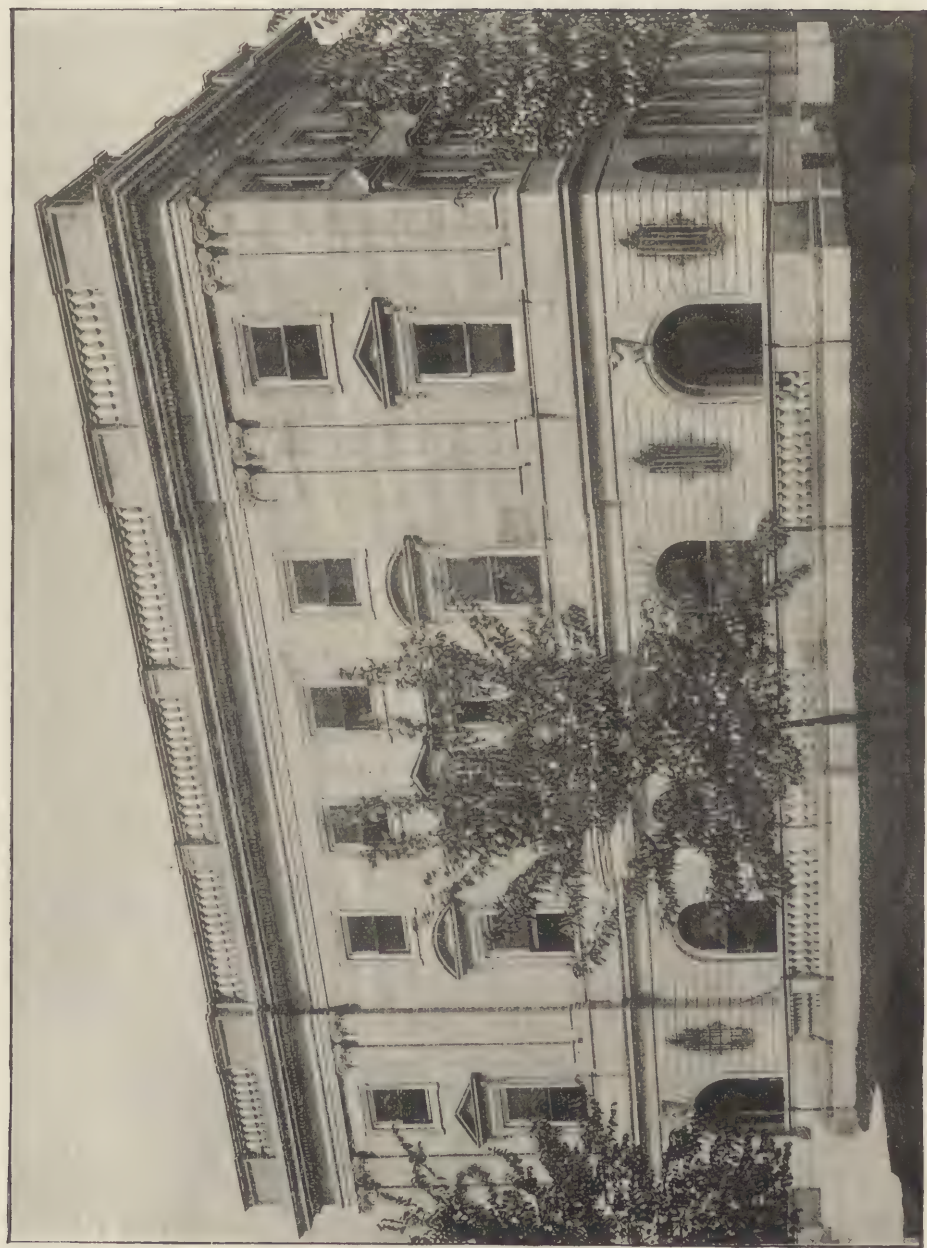
Every kind of structure has been confided to their care, and the firm has been called upon to assist in solving many of the radical problems which have been met in the remarkable evolution of building in the last forty years. Even a partial list of the large number of buildings which the firm has erected shows how great has been its activity and how general has been the confidence bestowed upon it. The Broadway Tabernacle, begun in 1857, was one of the first buildings constructed by Mr. Marc Eidlitz, and was followed by the Church of the Incarnation, Temple Emanu-el, St. Thomas' Church and Parish House at Mamaroneck, St. Gabriel's Church and Rectory, New Rochelle; St. George's Clergy House, Home of the Sisters of Bon Secours, the principal buildings of the Presbyterian Hospital, St.

Vincent's Hospital, German Hospital, Womens' Hospital, St. Francis' Hospital, the German Dispensary, New York Eye and Ear Infirmary, Isabella Heimath, Loomis Laboratory; Lancashire and Eagle Fire Insurance Companies' buildings, the Gallatin National Bank, National Shoe and Leather Bank, Seamens' Savings Bank, Bank for Savings, Metropolitan Opera House, Eden Musée, Steinway Hall, new part of Astor Library, Deutsche-Verein, Harmonie Society, Astor Building, Schermerhorn Building, Roosevelt Building, Black Building, Western Electric Building, Manhattan Storage and Warehouse Company's Building; the stores of Messrs. Arnold, Constable & Co., Lord & Taylor, Park & Tilford, Le Boutillier Brothers, Mitchell Vance Company, Scott & Bowne; the residences of Ogden Goelet, Isaac Stern, Robert L. Stewart, J. Pierpont Morgan and Peter Doelger, New York City; James M. Constable, at Mamaroneck, and Adrian Iselin, Jr., at New Rochelle. This list does not exhaust even the larger work. The firm to-day has in the course of erection among other buildings the following: The New York Clearing House, The Hotel Manhattan, The Roosevelt Hospital and the stores of Messrs. B. Altman & Co.

We have spoken so far chiefly of the personality of Mr. Marc Eidlitz, but in glancing through the foregoing list it will occur to many who are familiar with the fact that Mr. Eidlitz practically retired in 1888, that a great deal of the later, more costly and more important work was not directed by him. Mr. Otto M. Eidlitz is now the head of the house. He has been prominent in its affairs since 1884. Mr. Eidlitz is a civil engineer by profession and education, and his expert knowledge has been particularly valuable in the supervision of the heavy structures which the firm has erected of late years. Associated with his brother is Mr. Robert James Eidlitz, educated as an architect at the Royal Polytechnic, Berlin.

Expert knowledge of the highest kind is now absolutely necessary in the building craft. The builder of to-day ranks with the engineer and the architect, and the rapid displacement of the badly instructed artisan by the modern expert establishes more firmly, if possible, the prestige and position of a house like that of Marc Eidlitz & Son.





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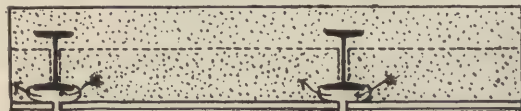
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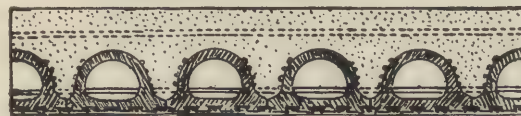
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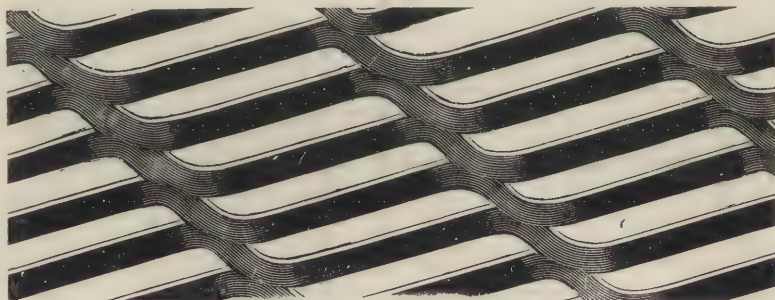
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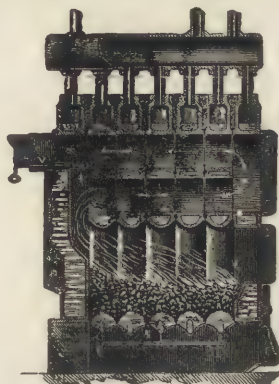
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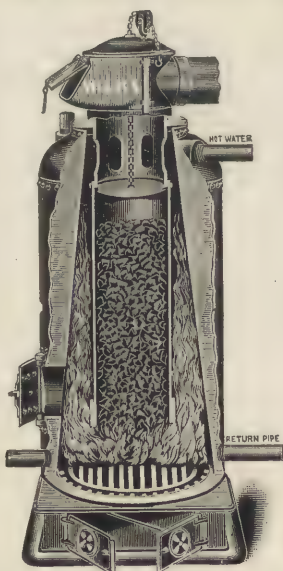
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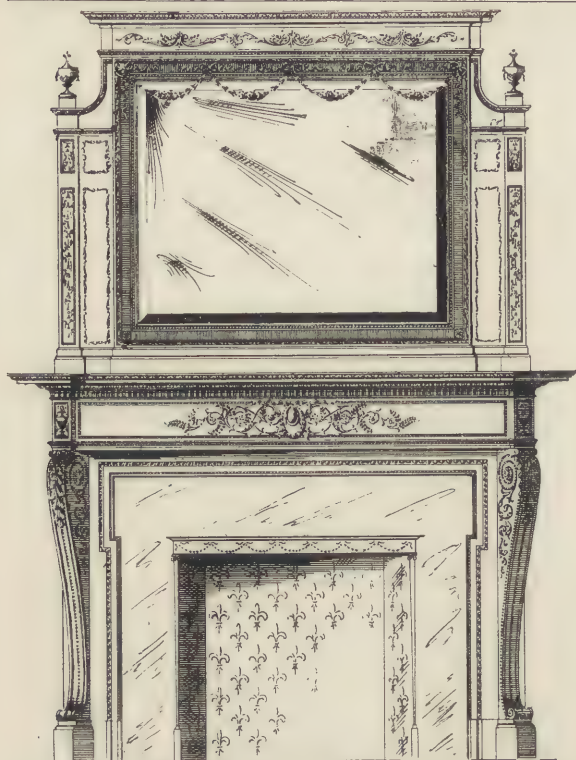
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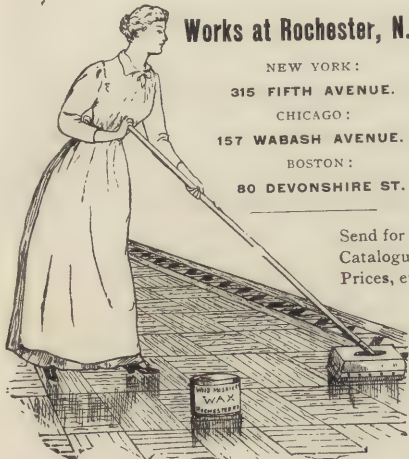
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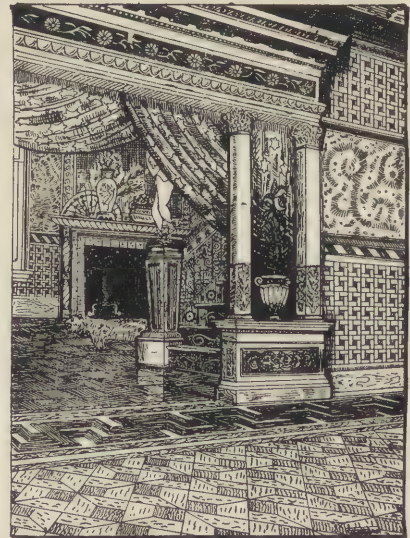
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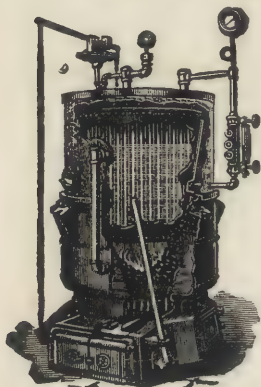
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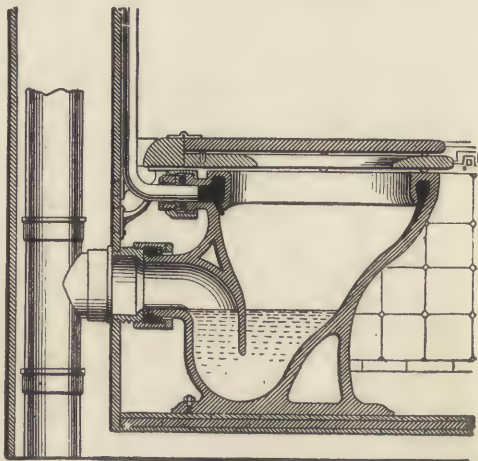
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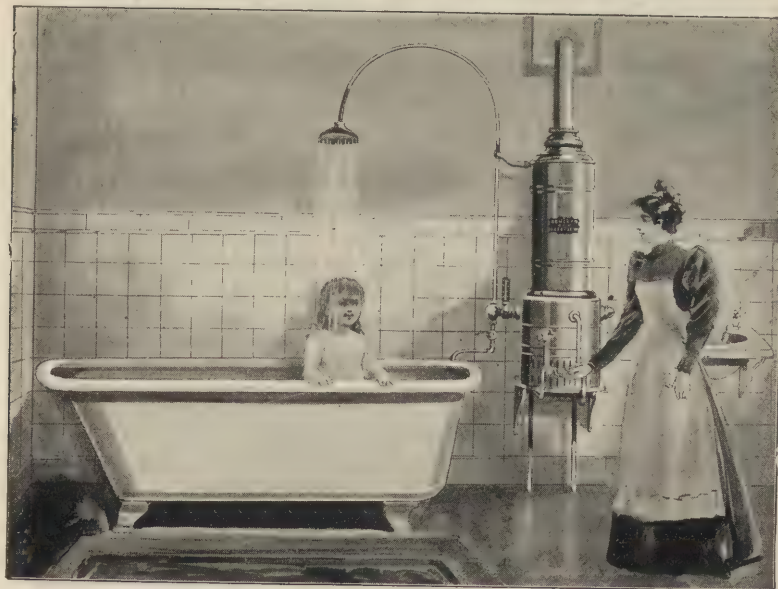
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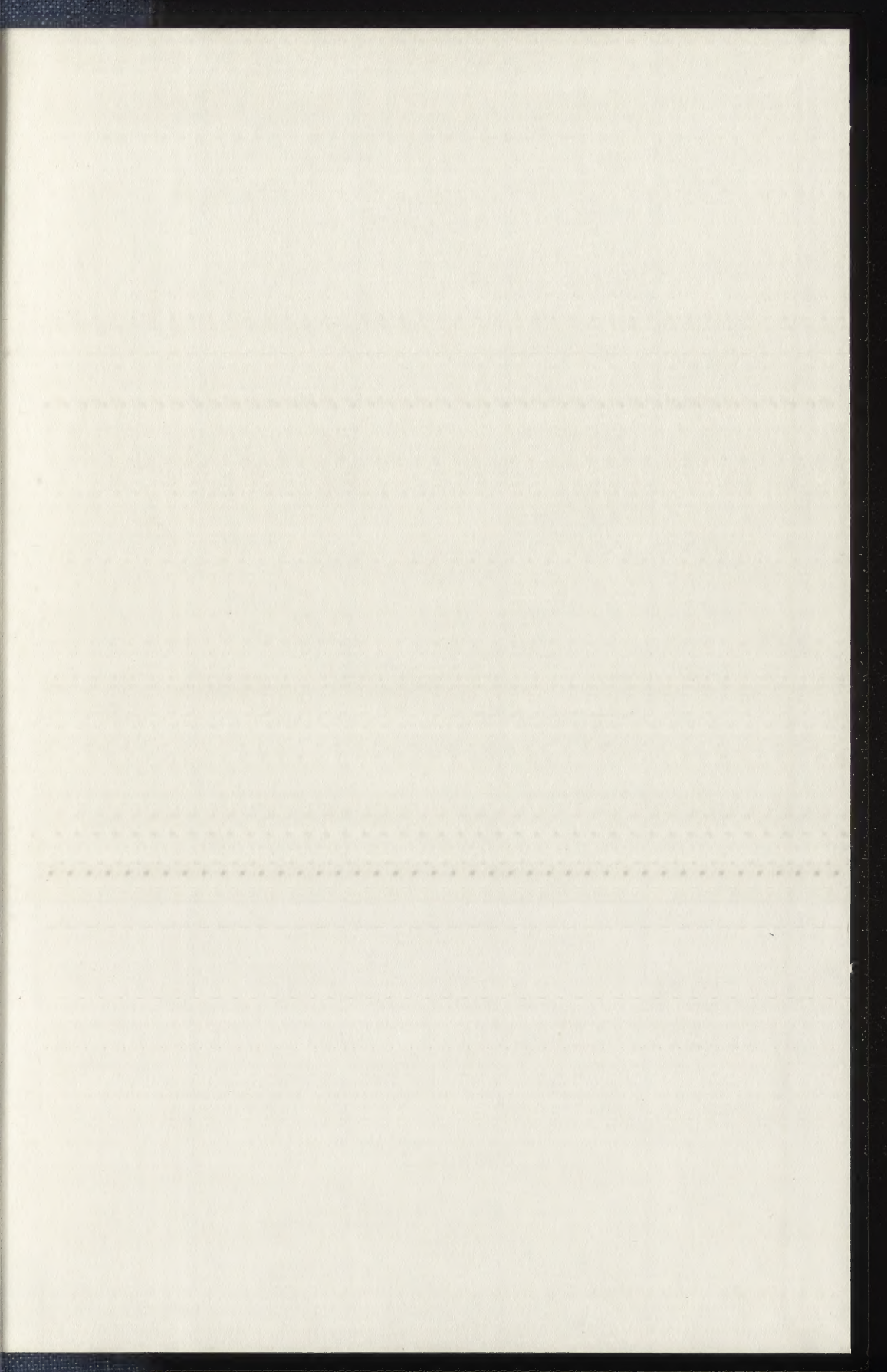
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